The Builder.

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Staffordshire Pottery and Porcelain.

POTTERY and Porcelain Manufacture in Staffordshire dates from the middle of the sixteenth century, but for nearly two hundred years after its introduction the produce of the industry was of small extent and of the rudest type. Tobacco-pipes, urns, glass-house pots, and butter-pots are mentioned in the old county records as the earliest descriptions of pottery made in Staffordshire. Dr. Plot, whose account of the infant manufacture is very elaborate, remarks (A.D. 1680):—"As for tobacco-pipe clays they are found all over the county, near Wrottesley House, and Stile Cop, in Cannock Wood, whereof they make pipes at Armitage and Lichfield, both which, though they are greyish clays, yet burn very white. There is tobacco-pipe clay also found at Darlaston, near Wednesbury,* but of late disused because of better and cheaper found in Monway Field, which is of a whitish colour and makes excellent pipes, as also doth another of the same colour dug near the salt-water pool in Pensnett Chase, about a mile and a half south of Dudley; and Charles Riggs, of Newcastle, makes very good pipes of three sorts of clay, a white and a *blew*, which he has from between Shelton and Hanley Green, whereof the *blew* clay burnes the whitest, but not so full as the white, *i.e.*, it shrinks more. But the best sort he has from Grubber's Ash, being whitish mixed with yellow. It is a short *britle* sort of clay, but burnes full and white, yet he sometimes mixes it with the *blew* before mentioned. But the clay that surpasses all others in this county is that at Amblecote, on the bank of the Stour, in the parish of Old Swynford, yet in Staffordshire, in the hands of that judicious and obliging gent. (*sic*) the worshipfull Harry Gray, of Enfield, Esq. . . . . I say the most *prefarrable* clay of any is that of Amblecote, of a dark *blewish* colour, whereof they make the best pots for the glass-houses of any in England. Nay, so very good is it for this purpose, that it is sold on the place for sevenpence the bushell, whereof Mr. Gray has sixpence and the workman one penny, and so very necessary to be had that it is sent as far as London, sometimes by waggon and sometimes by land to *Beaudley* [Bewdley], and so down the Severn to Bristol, and thence to London. . . . . Other potters' clays for the more common wares there are at many other places, particularly at Horseley Heath, in the parish of Tipton; in Monway Field, where there are two sorts gotten, one of a yellowish colour mixed with white, and the other *blewish*. . . . . Of these they make divers sorts of vessels at Wednesbury, which they paint with slip made of a reddish sort of earth gotten at Tipton.† But the greatest pottery they have in this county is carried on at Burslem, near Newcastle-under-Lyme, where for making their several sorts of pots they have as many sorts of clay, all dug round about the *towne* within half a mile's distance." The garrulous historian goes into a most minute account of the process of manufacture, which is very curious, and would be worth quoting did space allow; but the extract given sufficiently answers our present design, by showing in what parts of the county the pottery trade was at that period located. The concentration of the industry in that part of North Staffordshire to which it gives its name probably took place about the commencement of the last century. Burslem was the first centre of the trade which rose to anything like importance. As early as the year 1650 the place was called the *Butter Pottery*,* owing to the erection of a factory of some pretensions, for making butter-pots. These pots were cylindrical in form, and, by the provisions of an Act of Parliament in 1670, were required to be 6 lb. in weight, and to contain not less than 14 lb. of butter. This piece of legislation was due to a fraudulent practice by certain makers in the Moorlands, by making these pots thick at the bottom, in order to increase their weight. They were made of the coarsest clay, and displayed the rudest workmanship. About the year 1670 the rude article was further improved by a partial glaze, and soon after the vessels were further improved by coarse medallions of the reigning sovereign attached to either side.† At the close of the seventeenth century, glaze, of salt and lead, had become common in the earthenware manufactures of Staffordshire. At that period, according to Pitt, the historian, a great variety of useful and ornamental articles, in large dishes, jugs, and candlesticks, were manufactured at Burslem, exhibiting some pretensions to design and workmanship. It was not long, however, before a purer clay from Dorsetshire and Devonshire, was brought to North Staffordshire; but this was used only for washing or lining the insides or ornamenting the outsides of ware with flowers and figures of various kinds; and these white ornaments were sometimes founded upon a red body, well glazed with lead ore. The white clays of Devonshire and Dorsetshire, mixed with a due proportion of calcined flint, were used in the manufacture of "white stoneware." This proved an era of some importance in the history of the Potteries, although at the time such a result was quite unexpected. The clean appearance and durable quality of this white ware soon ensured for it a considerable demand on the continent of Europe. The first articles produced of this description were circular pieces, or such as were made on the thrower's wheel, and finished in the lathe. Plaster moulds, up to that time, had not been used. The only kind of moulds then known seem to have been made of brass, or a sort of clay known among potters by the name of "Tough Tom." Ralph Daniel, a potter of Cobridge, was the first, in conjunction with Aaron Wood, to introduce plaster moulds, the idea having been borrowed from the potteries of France. The gypsum mines of Derbyshire supplied the material in ample abundance, and complete table services of barleycorn, mosaic, basket-work, and other fanciful patterns were produced. According to Pitt, the introduction of plaster moulds marked an era in the trade, and the variety of produce was very considerably increased. In the year 1815, there were twenty ovens in the parish of Burslem, all of which glazed their wares with salt, an operation usually performed simultaneously on Saturdays, at noon, producing an effect which strangers have compared, not inaptly, to the emissions of a volcano. The historian already quoted remarks that various improvements in the body, glaze, and workmanship of the ware immediately followed the introduction of stone-glazing, the manufacture of white stoneware having by this time extended itself along the whole range of the line on which the various strata of coal presented themselves, at or near Tunstall, Shelton, Cobridge, Hanley, Stoke, Lane-end, and Mere Heath.

The first Staffordshire potters of whose works any reliable record has been preserved, were two Dutchmen, Elers by name, who brought the art from Holland, and established a small factory at Bradwell, near Burslem, as early as the year 1690. Pitt, differing from most historians, disputes the claim of the Elers to this distinction, owing, as he remarks, to the "very improved state of the manufacture of Cr-uch ware at Burslem, in the reigns of William and Mary, and Queen Anne, as well as on account of the unfitness of their oven at Bradwell from its small dimensions for this manufacture."* For half a century following the introduction of white stoneware, the lead ore glaze continued to be used, and small factories sprang up in all parts of the district. Manganese rubbed under or upon the glaze with a sponge, produced what is called "Tortoise-shell" ware. "Agate" ware was produced by the application of ground zaffer, and became largely in request for knife-handles, snuff-boxes, and other articles which were sent from the potteries to Birmingham, to be fitted with hinges, hoops, and springs. By an application of calcined copper, iron, and other metals, "Cauliflower" and "Melon" wares were introduced. Lead ore, with a small proportion of ground flint, delicately applied, produced the celebrated cream-coloured ware. This was originally made by Edwin Booth, of Tunstall, in 1750, and in the following year it was improved by Mrs. Warburton, of the Hot-lane, near Burslem.

About this period, Thomas and John Wedgwood, leaving the employ of their father, as lead or glaze potters, commenced on their own account the manufacture of white stone ware. In this enterprise they achieved marked success, improving the outline of the articles and the purity of the ware. A larger manufactory was soon afterwards erected near the Brindleys' famous windmill, where flint stones were reduced by a rapid process to fine powder. This factory was condemned by the populace as being too extensive, and by some was known as "Wedgwood's folly." It is a suggestive fact that this was the first earthenware factory in the Potteries not roofed with thatch. A considerable improvement in salt glaze was made soon after by William Littlor and Aaron Wedgwood. Littlor, as Pitt observes, had noticed how nearly the white stone ware approached to porcelain, and about the year 1750 he left Burslem, and commenced a porcelain manufactory at Longton, near Stoke. He so far succeeded as to excite the astonishment of the potters; but it proved an unprofitable article, and the manufacture of it was discontinued. Aaron Wedgwood, who married Littlor's sister, was a manufacturer of white stoneware, and joined his experience to that of Littlor in the attempt to improve salt glaze. The result of these experiments was the addition of ingredients of easy fusibility, with certain proportions of ground zaffer, and the flint and clay of which the body of the ware was composed. In this compound, when in a liquid state, the ware was dipped, by which it imbibed a thin coat or covering of the liquid; and this, when exposed to the fire in the usual method of glazing with salt, produced a fine, smooth, glassy surface, quite free from the small inequalities which are observable in all the pieces of ware glazed with salt alone.

* Pipe-making was at that time, and for a century later, an important industry in Wednesbury.

† The vessels referred to were no doubt common red jars and pitchers.

* Burslem is marked *Butter Pottery* in several old maps, but neither Speed nor Camden gives it that name.

† Some years since a vase was dug up near Burslem, ornamented by a basso-relievo medallion of Queen Anne, and surmounted by a crown.

* In 1796, some well-preserved specimens of this Crouch ware were dug up in the neighbourhood of Burslem.

The comparative imperfection of the pottery trades down to the middle of the last century is sufficiently indicated by the earnings of the workpeole at that period, which were too scanty to admit of the supposition that the craft displayed any considerable skill. In the year 1750, 5s. to 6s. represented the average weekly wages of an experienced journeyman potter, and a modeller was satisfied with a shilling a day. It is clear from this that the Staffordshire potters at that period were exclusively occupied in the production of the cheapest and simplest forms of earthenware, making not the slightest pretensions to rivalry with Chelsea and Sèvres. But a master-spirit was already maturing the genius, which, to quote the fitly-chosen words of his epitaph, soon "converted a rude and inconsiderable manufacture into an elegant art, and an important branch of national commerce."

For anything like a biographical sketch of Josiah Wedgwood, even if space admitted of it, this is not the place; but the story of this man's life is so interwoven with the industry in which he won his fame, that one or two of the bolder outlines of his career may be given as representing really so many important epochs in the history of his art. The son of a potter in humble circumstances, Wedgwood was the youngest of a family of thirteen. He began life as a "thrower" at the age of eleven, but soon after, a disease settling its dregs in the lower part of the leg, rendered amputation necessary, and he was no longer able to follow his employment. But, as Mr. Gladstone remarks, "in the wonderful ways of Providence, that disease which came to him as a two-fold scourge, was probably the occasion of his subsequent excellence. . . . . It sent his mind inwards, and drove him to meditate upon the laws and secrets of his art. The result was that he arrived at a perception and a grasp of them, which might perhaps have been envied, certainly have been owned, by an Athenian potter. . . . . We find the works of his earliest youth already beginning to impress a new character upon his trade: a character of what may be called efficiency combined with taste, and with the best basis of taste,—a loving docile following of nature." Soon after attaining his majority, he commenced business in partnership with a practical potter named Harrison, and when the term expired he linked his commercial fortunes with one Whieldon, but this did not last long, Wedgwood's expansive mind and energetic spirit rendering the yoke unequal. About the year 1760 he joined himself as a partner with Mr. Richard Bentley, a kindred spirit, who excelled especially in the rendering of classical art, and into the service of the new firm came Chisholm, the renowned chemist, and Flaxman, the world-famed modeller of plastic art. With such associates, it was no wonder that a new life dawned upon the scene of Wedgwood's labours, and that a rude attempt at ornamentation, whether in outline or finish, gave place to the highest excellence of artistic beauty. From the Etruscan, Portland, or Barberini vase, down to the cheapest article of domestic use, Wedgwood's productions alike exhibited a remarkable advance in beauty of form and decoration. On this subject we cannot do better than quote the beautiful words spoken by Mr. Gladstone at the opening of the Wedgwood Institute in the autumn of 1863:—"It would be quite unnecessary to dwell on the excellence of such of the works of Wedgwood as belong to the region of fine art, strictly so called, and are not in the common sense commodities for use. To these all the world does justice. Suffice it to say in general terms that they may be considered partly as imitations, partly as reproductions, of Greek art. As imitations they carry us back to the purest source; as reproductions they are not limited to the province of their originals, but are conceived in the genuine and free spirit of that with which they claim relationship. But it is not in happy imitation, it is not in the successful presentation of works of fine art, that the specialty of Wedgwood really lies. It is in the resuscitation of a principle,—of the principle of Greek art; it is in the perception and grasp of the unity and comprehensiveness of that principle. That principle lies in severe and perfect propriety,—in the uncompromising adaptation of every material object to its proper end. If that proper end be the presentation of beauty only, then the production of beauty is alone regarded, and none but the highest models of it are accepted. If the proper end be the production of a commodity for use, and perishable, then a plural aim is before the designer and producer. The object must first be adapted to its use as closely as possible; it must be of material as durable as may be; it must be of moderate cost; then it must receive all the beauty which can be made conducive to, or concordant with, the use. And because this business of harmonising use and beauty, so easy in the works of nature, is arduous to the frailty of man, it must be made the object of special and persevering care. To these principles the works of Wedgwood habitually conformed." Wedgwood's remarkable enterprise not only raised the products of his industry to the highest type of excellence, but to it was also due in a great measure the opening up of cheaper and more direct facilities of transport by means of the Grand Trunk Canal, which linked the Mersey to the Trent. The effect of his combined labours during a quarter of a century was to raise a half-civilised district of 7,000 people, partially employed and poorly paid, to a prosperous and skilled community of 20,000. The wilderness, as if by a stroke of magic, was suddenly transformed into a fruitful field. Large and well-arranged factories sprang up in all directions, superseding the low, miserable workshops thatched with straw, which had hitherto been characteristic of the trade; and multitudes of intelligent and highly-skilled art-workmen flocked to a scene which gave such fair promise of employment to their best talents.

To the experiments of Wedgwood are due the following species of earthenware and porcelain for various useful and ornamental purposes:—Terra cotta, basaltes, or black ware, white biscuit, jasper, bamboo, and porcelain biscuit, all of which are capable of receiving a high polish, are proof against acid, and possess high qualities of endurance. To each of these materials Wedgwood gave the purest types of art, antique vases and busts dug up from the buried ruins of Pompeii and Herculaneum affording in many instances the models from which he worked. A few years before Wedgwood's death, in 1795, the art of printing upon glazed ware various artistic devices was invented and perfected by an ingenious engraver, of Liverpool, named Carter, and as an instance of the success of this process, it is stated that from his factory in the Potteries, Wedgwood was accustomed to send to Liverpool "a wagon-load of cream-coloured ware every fortnight to be printed on this new method." In a few years, however, many engravers settled in the Potteries, and the impressions taken from copper plates upon thin, soft paper were transferred to the ware on the original plan. Subsequent enterprise largely improved upon this method, simplifying the process, and so reducing the cost as to bring this beautiful form of decorative art within reach of the humbler classes.

Josiah Spode, of Stoke, who, in Wedgwood's days, was a successful producer of blue-printed and other earthenwares, commenced, in the year 1800, the manufacture of porcelain, which was at once pronounced superior in quality to any previously made in England, and which even surpassed in transparency the world-famed Sèvres ware. The material of this new ware contained a large admixture of bone and feldspar. His enameller, Henry Daniel, introduced, in 1802, the present method of ornamenting china in raised unburnished gold. In 1806 Spode's factory had become the most extensive establishment of the kind in Europe. At Mason's factory in Delph-lane, ironstone china was first produced, and in the early part of the century it was very largely worked up into jugs, jars, vases, dinner-services, and other kindred wares. Enoch Wood, of Burslem, whose works occupied the site of five old factories, established, in connexion with his factory, a museum filled with specimens illustrative of the rise and development of the potter's art in Staffordshire—a labour of love, which did much to promote the progress of the industry, and won for him the patriarchal title of "father of the Staffordshire potteries." Other prominent manufacturers of that period who, in various ways, advanced the excellence of the industrial products of the district, and whose names still survive in connexion with the trade, may be mentioned:—Ridgway, of Shelton; Davenport, of Longport; Bourne, of Fenton; Dimmock, of Hanley; Hicks, of Shelton; Minton, of Stoke; Meigh, of Hanley; and Copeland, of Stoke; to some of whose works I shall refer more fully by-and-by.

The present number of potteries in Staffordshire is as follows:—Burslem, 61; Fenton, 16; Hanley, 56; Longton, 71; Stoke, 12; and Tunstall, 24; being a total of 240. At a moderate computation these factories employ in the aggregate 27,000 workpeople, of whom over 10,000 are females. The increase of population in the pottery district affords a sufficient indication of the growth of the trade. In 1738 the inhabitants of the potteries numbered 4,000; in 1811, the number had risen to 31,000; in 1838, to 63,000; and in 1864, to 123,000. The estimated value of the earthenware productions of the potteries is 2,500,000*l.* per annum, of which sum fully one-half is disbursed in wages. The quantity of prepared clay annually consumed is nearly 200,000 tons. Mr. H. Coghill gives the following statistics respecting the proportions of clay required in the manufacture of earthenware and china:—

Earthenware.	Per cent.	*China.*	Per cent.
Dorset and Devon clays	28	Calcined bone, or phosphate of lime	43
Cornwall clay	26	Cornwall stone	30
Flint	29	Cornwall clay	27
Cornwall stone	17		
	100		100

The annual consumption of coals in the trade may be computed at 450,000 tons. To stain the clay, and print the ware, about 67,000 lb. oxide cobalt are used, about 1,100 tons of borax and boracic acid to glaze it, and 12,000 oz. of gold to gild and embellish it. The manufacture of china in the potteries annually requires 4,500 tons of calcined bone, the greater part of which is imported from South America. The exports in 1850, according to the Board of Trade returns, amounted to 999,448*l.*, being an increase of 50 per cent. since the year 1836. The subsequent fourteen years showed a proportionate advance. In 1864 the total exports amounted to 1,422,130*l.*, and the home market absorbed 1,487,870*l.* The French treaty has benefited this trade only to a very slight extent, the annual requirements of that market being only some 50,000*l.* in value; and it has been well observed by a local producer, that the French potteries are too extensive to admit of any great requirement in the shape of porcelain, manufactured in this country.

A detailed account of one or two of the leading representative establishments will afford a more accurate idea of the existing importance and characteristics of the ceramic art in the Staffordshire potteries than could be given by mere statistics or by general observations. We will commence with a sketch of the great house of Minton & Co., at Stoke-upon-Trent.*

These works were established in the year 1789 by the late Mr. Thomas Minton, a native of Shrewsbury. Mr. Minton was a practical engraver, and clever at his art, as specimens of his work in etching and engraving recently found bear ample testimony. His commencement was at a time very favourable for progress. The labours of Wedgwood had paved the way to success, and called for increased production, for an import trade had been converted into an export one. English pottery then commanded a high range of prices, and it may be interesting to remark that the old "willow pattern," copied from an old Chinese plate, was first introduced at these works, and was then sold at 5s. 6d. per dozen plates, whereas the present price averages about 2s. The productions of this house were for a number of years principally confined to useful articles, and, being of a good, durable material, without much reference to artistic decoration, soon commanded a good position in the home market. Mr. Minton died in 1836, and was succeeded by his second son, Herbert, who achieved great eminence as a potter. He invoked the best aid at his command, both English and foreign, and the specimens in almost every variety of style shown at the Exhibition of 1851 may be referred to as proofs of his success. On that occasion the first specimens of Minton's "majolica" ware, now so justly celebrated, were shown, and also, for the first time, a combination of Parian statuary with decorated porcelain for dessert-services. The service of this class attracted universal admiration, and was purchased by her Majesty, as a present to the emperor of Austria. Mr. Herbert Minton was commissioned by her Majesty to make the presentation, but as great coolness had arisen between the two courts, on account of a speech made by Lord Palmerston, some delay and difficulty occurred in obtaining an audience, but it was at length satisfactorily accomplished; the present was graciously received, and cordial relations were soon afterwards resumed. To Mr. Minton the public is indebted for the revival

* For many interesting details here given we are indebted to the courtesy of Messrs. Minton, through their representative, Mr. J. Stringer, of Stoke-upon-Trent.

of the art of making encaustic pavements, now in such general demand for churches and other public buildings, and without which even ordinary dwellings of any pretensions are scarcely considered complete. It will illustrate the character of the man if we state that for many years he pursued this branch of business at a very considerable loss; and when on one occasion he was urged by his partner to give it up, his characteristic reply was, "I will make encaustic tiles if they cost me a guinea a piece." Mr. Minton received during the Paris Exhibition, at the hands of the Emperor of the French, the insignia of the "Grand Cross of the Legion of Honour." He died in 1858, and was succeeded by his nephews, Mr. Colin Minton Campbell and Mr. Daintry Hollins, who, however, in 1868 dissolved partnership, the encaustic tile department devolving on Mr. Hollins, all the other branches being carried on as usual by Mr. Campbell in conjunction with his cousins, Mr. T. W. and Mr. Herbert Minton, so that the old name is not likely to become extinct. The manufactures of the firm embrace nearly every article of the potter's art, so much so that any one embarking in the retail trade might from these works alone completely furnish his shop, from the richest ornament to the meanest kitchen requisite. The money expended in perfecting these varied manufacturers has been enormous, and the annual value of the ware produced averages 105,000*l*. The number of hands employed is between 1,600 and 1,700, and amongst them there are upwards of 600 females, the latter being largely engaged in enamelling and "transferring." There is only one lady designer in the establishment, and she boldly challenges competition with the sterner sex. There are two clever German painters. All the rest are English, some of them superior artists, who derived much advantage from their course of study at the school of art conducted at the building erected as a memorial to the late Herbert Minton. Among the *chefs d'œuvre* of this establishment may be noted: a pair of large vases, turquoise ground, decorated with birds and flowers, purchased by Baron Rothschild. A pair of candelabra, with figures of Highlanders supporting hunting trophies, executed by royal command. The large majolica fountain, under one of the domes of the Exhibition (1862) building; candelabra, 8 ft. high, in the same material; and several great artistic works in parian.

The late William Taylor Copeland, founder of the famous house which bears his name, commenced business at Stoke in 1833, succeeding the Spode family at the factory established by Josiah Spode in the preceding century. The present firm of W. T. Copeland & Sons produce articles in every branch of ceramic manufacture:—porcelain, china, earthenware, majolica, encaustic tiles, slabs for mural decoration, and parian. The last-named material was invented by this firm, about the year 1843, and from it have been produced many rare and beautiful works of art. Gibson, Foley, Durham, Marshall, and other eminent sculptors have, from time to time, modelled for Messrs. Copeland, and the reproductions have faithfully reflected in almost every instance, the true spirit of the artist's design. Classic subjects largely enter into this description of manufacture, the Greek Slave, the tinted Venus, Cupid, and Paris, being among the more widely-known representations. A miniature bust of the Princess of Wales, for the Art Union of London, is perhaps the greatest success achieved by Messrs. Copeland during the last few years; the delicate delineation of outline, and the great naturalness and beauty of expression being remarkable evidences of the perfection attained in this description of art-workmanship. The number of hands employed by this firm is upwards of 850. The annual produce is 7,500 packages, varying in value from 5*l*. to 50*l*. each, exclusive of the more elaborate and costly works of art.

The High Price of Steel.—One of the leading firms in the steel trade has within the last few days received letters from the United States countermanding a large number of orders on account of the high prices which now prevail here. These orders are being replaced in America, and both manufacturers and workmen in England are likely to feel the effects of the grasping and idling policy which has been recently pursued, with such insane heedlessness, both in the coal and in the iron trade.

THE DESTRUCTION OF ALEXANDRA PALACE.

WHEREVER plumbers are employed on roofs of important edifices, a watch ought to be set over them: there are such reckless men among them, that wherever they are so employed, there is the utmost danger to the edifice. At twelve o'clock, when dropping work and dinner are the sole ideas in the head of the workman, down he throws his hot iron, as if it were burning *him*, and off he goes from his brazier, leaving everything to chance. So must it have been in the present instance; and from twelve o'clock at noon on Monday last we must date the origin of the fire at the Alexandra Palace, which, in one short hour—the workmen's dinner hour,—destroyed half a million of money's worth, and many pleasant hopes in the North of London.

The dome roof—the very centre and key of the whole building—was the spot where the plumbers were at work, and there it was, accordingly, where the fire originated. It is said to have been first observed about half-past twelve, but this we cannot understand; for the writer of this, about half-past twelve, saw great volumes of smoke already pouring up high into the sky from the direction of the Palace, while he was in Holloway, four or five miles away; and by half-past one nearly all had disappeared from his view, and the Alexandra Palace was an unroofed ruin. There was a want of water; and the height of the dome (some 150 ft. or so above the floor) was too great for the ascent of what water there was.

The valuable tapestry and lent pictures were all saved, but the collection of rare and valuable pottery and porcelain, it is said, and Messrs. Defries's costly crystal chandelier, &c., have perished with the multitude of other valuables. The exhibitors have suffered sadly.

The fire was still burning when Messrs. Kelk & Lucas, and two or three other directors, together with Mr. Grüning, held a meeting in the afternoon, and decided to carry out their programme of the season as far as the out-door *fêtes* go, and to rebuild the Palace as quickly as practicable; and next day a meeting of the company was held, when their architect (Mr. Johnson, of Meesom & Johnson) was instructed to provide a new design for the re-building, which, we hear, the directors are resolved to have completed within a year.

Only one death is as yet known to have occurred, but two or three persons are missing, and several have been injured.

The deepest sympathy is felt generally for the directors and the company, while the inhabitants of the northern district consider the destruction of the Palace a national disaster. The Palace, we learn, was insured to the extent of 120,000*l*. only on Thursday or Friday in last week.

Within the main walls of the gables or pediments are 9-inch brick walls. Several of these have lately fallen, causing much dismay, and those which remain up are expected to come down also, possibly through the behaviour of the iron rods, which, if we mistake not, tie them to the outer walls.

A LESSON FROM THE FIRE.

THE directors of the Alexandra Palace have paid a heavy penalty for their economising the salary of an engineer,—an officer who should have had the responsible charge of the water supply of the edifice, as well as of the communications of the establishment, and of other engineering details. It has been a penny-wise saving with a vengeance! It is no reply to say that the manager is a professional man. The onerous duties proper to that office are ample to take up the whole attention of one man, and are such as to render it out of the question that he should exercise the entire reflective vigilance of an officer who has only professional duties to discharge. The manager of such an establishment is, in fact, the person who has charge of the public attractions. The anxiety and stress of mind involved by such a function are not small. Three weeks is stated, by some of those who have the largest experience in these matters, as the average life of a new attraction. The novelties have to be not only provided, as far as forethought and research go, but to be placed *en scène*. The general supervision of staff, and maintenance of the whole concern in going order, so fully occupy the thought as to leave no room for the discharge of the entirely independent functions of the engineer. The confusion which attended the railway arrangements on the opening of the palace is another instance of the want of a proper officer.

We may be asked if we are not regarding a disaster, which all of us deplore, from a too exclusively professional point of view. We reply that we conceive the safety of the public to depend, in no small degree, upon the general enforcement of the proper *status* of professional men. People constantly endeavour to save tangible payments, in the shape of fees or salary. But they do so, on the broad average, at a heavy cost to themselves. We know the adage that the man who is his own lawyer has a fool for a client. How many thousands, spent annually in litigation, might have been saved by the expenditure of perhaps a less number of six-and-eightpenny fees? What is the result,—on temper, health, and length of life,—of the saving of the fee that should have gone to the medical man? It is the same in the two sister professions of the architect and the engineer. People constantly think that they can save money which, it seems to them, is so easily earned by the professional man. They are little aware of the long course of study and experience that enables "the man of art," in whatever line, at once to put his finger on the weak place. Of late years there has been more disposition to dispense with the proper responsibility of the architect and engineer than even with that of the lawyer or the doctor.

The misfortunes thence arising have been numerous and great; and we are not yet, it may be, at an end of the dangers to public safety that spring from the same fertile cause. The chief of the Fire Brigade expressed to the reporter of one of the daily papers his astonishment that so large a building should have been erected in such a situation without better provision for a supply of water. We doubt if there has been, in this case, any professional man so thoroughly in the position of architect or engineer of the building, in the first instance, as to be now exposed to the condemnation thus uttered, or to be liable to be asked the question how he came to construct, of *papier mâché* and wood, an enormous fire-trap that would ignite with a single spark. The way the fire spread in the dome was a marvel.

We do not deserve the title of civilised men if we allow such great disasters as the fire at the Crystal Palace and the fire at the Alexandra Park to succeed one another without deriving some benefit from lessons written in such characters of flame. Who is to blame? is the first question. After a little fuss the reply is generally, "Providence. It has been an unavoidable accident!" Here, however, is one distinct cause to be inquired into, namely, absence of proper professional responsibility. Will it be the same in the next great fire? If so, we may be said, indeed, to tempt misfortune.

THE NEW ST. STEPHEN'S CLUB BUILDING.

THE new building for the St. Stephen's Club, opposite the clock tower of the Houses of Parliament, and which has for some months been in course of erection, is now beginning to display its architectural features, the principal elevation at the angle of the Embankment and New Bridge-street having already been carried up to the extreme height of the ground floor, and within the last few days the iron columns above, indicating the lofty height of the first floor, have been fixed in their places. Before the ground level of the Embankment and New Bridge-street was reached the works in the basement and sub-basement, which are carried to a great depth below the street level, occupied a considerable time. These portions of the structure are not the least interesting features in it. The sub-basement will contain extensive cellars, together with a steward's-room, and several other apartments, whilst in the upper basement there will be clerks' rooms, dressing-rooms, committee-room, and lavatories, and in connexion with this upper basement there will also be a subterranean communication with the Houses of Parliament, passing under New Bridge-street, and a similar communication with the Metropolitan District Railway and with the steam-boat pier.

The style of architecture selected for the building is the French Renaissance, and the elevation, carried along the Embankment and into New Bridge-street, is about 160 ft. in length,

the building extending backwards to a depth of 80 ft. The elevation will consist of the ground-floor, and first, second, and third floors, with dormers, the materials used in the frontage being Portland stone, with bases and shafting of red and grey polished granite, and similar polished granite columns will also be freely introduced in the ground-floor and several floors of the elevation. The principal central entrance on the ground-floor on the Embankment portion of the frontage will be 20 ft. in width. On the first-floor over the main entrance there will be a large central window, with a niche on either side for the reception of a statue. The windows on the first-floor are unusually lofty, being 13 ft. in height. The elevation will have a bold and massive main cornice, and above there will be a lofty mansard roof, with ornamental iron casting.

The principal entrance from the Embankment leads into an entrance-hall nearly 70 ft. in length, at the rear of which is the main staircase, circular in form, and which leads up from the ground-floor to the several stories above. The ground-floor contains the library, a spacious apartment about 60 ft. by 20 ft.; a morning-room of almost similar dimensions, but nearly square in form, being 49 ft. by 46 ft.; together with a small reception-room. At the northern angle of this floor a range of arches gives access to the District Railway. The first-floor contains a large coffee-room, and members' and strangers' rooms; on the second-floor are the members' billiard-room, strangers' billiard-room, smoking-room, and card-rooms; whilst the third-floor contains the kitchens, and apartments for the *employés* of the club; and above are a number of bedrooms. The kitchen floor on the third story is intended to be fire-proof.

The building, which is being erected for a new club, consisting of several members of Parliament and others, is expected to be ready for opening by the commencement of next year's Parliamentary session.

Mr. J. Whichcord is the architect; and Messrs. Peto, Brothers, are the builders.

PUBLIC WORKS IN EGYPT.—SUEZ.

A SHORT report has been published upon this subject, and is prefaced by a description of the chief public buildings of Suez. One of the most important is the "Suez Hotel," a large, square, whitewashed building, consisting of a ground-floor and upper story, and measuring externally 200 ft. by 120 ft. The first European-built house is occupied by the agent for the Peninsular and Oriental Steam Navigation Company, which is built much upon the model of the hotel, although on a smaller scale, showing a frontage of 110 feet, and running back 100 ft., with a central court, 50 ft. by 45 ft. Adjoining these premises, is the British post-office, which was also built by Europeans; while the next conspicuous building is the Egyptian post-office, a moderately large structure, 50 ft. square, though neither very imposing in appearance nor commodious in design. A new and handsome Government House has also been built in Suez for the Egyptian Government, at a cost of over 30,000*l.*, by Messrs. Dussaud Frères. This building, in size and style, though somewhat marred, it is mentioned, in external effect, by want of elevation, and perhaps, too decidedly French in style for the locality, is the most imposing edifice that Suez has yet seen. It consists of two large wings, united by offices, and a spacious entrecourt, covering in all a space of 333 ft. by 133 ft. Each wing is 133 ft. by 83 ft., and consists of two stories, counting as one of them the ground-floor. The western wing is appropriated to the personal accommodation of the governor, and the eastern wing to that of the Divan and Government offices. The Khedive, some time since, granted a concession for the distribution to the town of fresh water from the fresh-water canal to a company under French management, which erected, for the purposes of its concession, at a distance of about a mile from the town, a system of waterworks, with filters and steam-pumps for high-service; the cost of such works being, it is stated, about 30,000*l.* The water company, however, has not proved a success, financially speaking, owing to the disinclination of the inhabitants to pay the necessary charges. This, it is to be hoped, will be remedied. The construction of important docks has also been a work of importance at Suez; and in a report to which we refer, a full description is given of the construction of a large dry dock at Suez, although, as the matter is now rather old, there is no necessity for us to go over the ground again. It may be mentioned, however, that the studies and examination of the ground for this dock were begun some years ago by M. Stœcklin, an "Ingénieur des Ponts et Chaussées" of France. After the plans had been prepared by this gentleman, and approved of by the authorities, the Viceroy contracted with the Messageries Impériales Company to build the dock for 7,000,000f. The latter company employed as their sub-contractors Messrs. Dussaud Frères; and in the course of the work a further sum of 1,500,000f. was paid to the sub-contractors in commutation of native labour, which was to have been supplied to them by the Viceroy, but which was found not to answer practically. With some other items, this sum made the whole cost of the dock to amount to about 350,000*l.* The dock is 410 ft. long, by 90 ft. wide at the top, and 400 ft. by 70 ft. on its floor. The width between the entrance piers is 80 ft. Subsequently, by command of the Khedive, Messrs. Dussaud submitted a design for a port capable of receiving an unlimited expansion without interference with the use of the completed portion of it while a new portion was being added. The design for this port—now in course of execution by Messrs. Dussaud Bros.—includes the formation of a large quay on the south, for Government purposes, and a jetty on the north, of exactly half the width of the present central "mole." This extent of port will afford 102 acres of water surface, and nearly 50 acres of quays. The length of the quay front, including the eastern quay, will be 3,250 metres (10,650 ft), which will afford twenty-five berths of 400 ft. each for ships to lie broadside on, and leave 600 ft. over for stairs, lighters, and small craft. It is stated that the question of protecting the new port by batteries has been before the Khedive, but for the present left undecided. As Egypt has no naval force which could cope with European ships of war, it is not improbable that shore batteries will be added in the course of time to the port. This would involve the building of cover for the men for manning the batteries and the protecting of the line of railway communication with the town.

THE PURCHASE OF SITES AND BUILDINGS FOR IMPROVED DWELLINGS FOR THE POOR.

THE Special Dwellings Committee of the Charity Organisation Committee resumed its weekly sittings on Wednesday, after the Whitsuntide holidays. Lord Napier was in the chair.

The subject for consideration was that of "sites," divided under four heads. The first portion discussed was "the desirability of recommending improvement associations to apply for compulsory powers for the purchase of sites."

Mr. Vigers observed that, from his experience and knowledge as a surveyor and a purchaser of land and property for rebuilding upon, and for other purposes, he could say it was altogether impracticable for improvement associations to apply for such compulsory powers with respect to sites on which inferior property already stood. The wisest course to pursue in his judgment was for the associations to look out merely for vacant land on which to erect dwellings for the poor. He was perfectly satisfied that they would have a difficulty in raising up houses for the industrial classes on land costing more than 5s. per foot, and, without endeavouring to purchase sites compulsorily on which buildings at present stood, he was convinced that eligible land was to be purchased in various parts of the metropolis. In proof of this he might say that he had recently purchased land in Blackfriars for 4s. per foot, and in the neighbourhood of Grosvenor-road, Pimlico, for 2s. 6d. per foot. On the other hand, if the associations obtained these compulsory powers, and attempted to purchase any block of inferior property as a site, he was persuaded they would have to pay a much higher rate for the land, because, in the first instance, a jury would take into consideration the rental received for the property, however inferior, and beyond that there would be the usual 10 per cent. allowed for compulsory purchase, and therefore with the value of the land itself, they would have to pay a much higher price than 5s. per foot. He at once admitted, that in the event of these powers being obtained, he should advise any client of his to ask for the amount involved in a compulsory purchase, and entertaining these views, he thought the obtaining of such powers would be followed by a failure of the object which they had in view, and that the high price which they would have to pay for land on which to erect buildings, would not be compensated by the low rate of interest to be paid for the borrowed money.

Dr. Greenhill, on the contrary, was of opinion that if the Government would allow the improvement associations to borrow money at a low rate, they would be enabled to purchase sites with inferior buildings upon them, on advantageous terms.

The Rev. Mr. Simpson thought, after the explanation given by the first speaker, that if the owners of this class of property, who were grinders of the poor, insisted upon an artificial price being paid for houses unfit to live in, for which they obtained such high rents, it would not be practicable for the improvement associations to press for these compulsory powers of purchase. At the same time he thought it ought to be placed on record that if there were no difficulties in the way the purchase of such property by private improvement associations was desirable.

Mr. Storr agreed with Mr. Vigers that they ought not to give more than 5s. per foot for land on which to erect workmen's dwellings, whereas if they bought up rows of inferior houses they would have to pay at least at the rate of 10s. per foot. His notion was that it was altogether impracticable for private associations to be armed with these powers, although he thought that public bodies should possess them.*

Mr. Bosanquet thought that the only way of preventing the owners of this inferior class of property from placing an artificial value upon it would be by enforcing the provisions of Mr. Torrens's Act.

Mr. Blake Humfrey was opposed to private associations being armed with these powers, but he thought the Government ought to be able to say to the owners of such property, "You shall not only be compelled to sell it, but shall sell it without putting an artificial value upon it."

The following resolution on the subject was ultimately adopted: — "That this committee, having already approved of the policy of conferring compulsory powers on the Corporation of London and the Metropolitan Board of Works, or other municipal authority, for the purchase of sites for the erection of dwellings, do not recognise the expediency of extending similar powers to private associations, except in special cases."

The following heads were next discussed, at considerable length, but ultimately adjourned to Wednesday next: — Amendments to Mr. McCullagh Torrens's Act, and especially re-introduction of omitted clauses, compelling local authorities to rebuild; Reservation of Sites in Railway and improvement Bills; Powers to limited owners to sell lands for dwellings for labourers.

THE PRESTON STATUE TO THE LATE EARL OF DERBY.

THE statue of the late Earl of Derby, which has just been placed in the Miller Park, at Preston (advantageously situated in a sloping position on the banks of the river Ribble), was executed by Mr. Noble.

The statue is made from a block of Sicilian or Campatella marble. The marble base is about 1 ft. in height, and the figure itself 11 ft., the whole weighing between 5 and 6 tons. The original block from which the statue has been cut weighed 18 tons. The attitude assumed is well adapted for giving full expression to the countenance of the deceased, and the form and features of the Earl are represented with considerable exactness. He is dressed in his usual attire in the House of Lords, and depicted in the act of taking part in a debate. His right hand contains a scroll, and his robe of rank, as an earl, is thrown carelessly behind him, and forms a covering to the three volumes in which his chief literary works are comprised. The uppermost represents his translations from Horace and other Classical authors, whilst the other two volumes contain his translations of Homer's "Iliad," and the words on these may be seen by the spectator at a distance.

* Whether desirable or not it is tolerably certain that Parliament would not grant the required compulsory powers to private associations.—ED.

The pedestal upon which the figure stands is 13 ft. 6 in. in height. The first base is of a rusticated character, being made from Peterhead granite, and measures 10 ft. square. The next course is made of Rubslaw granite, and is 8 ft. 6 in. square. The remaining parts are composed of Kennay granite, and measure, respectively,—third course, 7 ft. square; fourth, 6 ft. 4 in.; the die, 4 ft. 5 in. by 4 ft.; the frieze, 6 ft. 4 in.; and the caps in proportion. The rusticated base is unadorned, but the remaining courses are artistically moulded. The die itself weighs 7 tons, and the pedestal, as a whole, 40 tons, the pedestal and statue together weighing about 46 tons. Messrs. Macdonald, Field, & Co., of Aberdeen, produced the minor part of the work.

AWARD OF PRIZES, ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR GILBERT SCOTT, R.A., in his capacity of President, presented the Royal Gold Medal to Mr. T. H. Wyatt, at a meeting of the Institute on Monday, the 9th inst., and made an address, to which we may hereafter refer, Mr. Wyatt responding in suitable and effective terms.

The other prizes and premiums presented were as follow:—

Soane Medallion.—Wm. Frame, of 10, Young-street, Kensington-square.

Medal of Merit to J. H. Eastwood, 77, Chancery-lane.

Institute Silver Medal, and Five Guineas.—A. H. Kersey, of Kingswood Lodge, Lewisham-road, Lewisham.

Medals of Merit to Thos. Garratt, of 15, Prince's-row, Buckingham Palace-road, and Arthur Hill, of 22, George-street, Cork.

Essay Prize (*Medal of Merit*).—Alfred Jowers, 24, Victoria-road, Kilburn.

Pugin Travelling Studentship, 1873 (*Medals of Merit*).—P. J. Marvin, of 20, Camden-street, Camden-town; R. C. Page, of 15, Clarendon-street, Warwick-square.

Pugin Travelling Studentship, 1873 (*Honourable Mentions.*—Thomas Garratt, of 15, Prince's-row, Buckingham Palace-road; Walter L. Spiers, of 21, Bernard-street, Russell-square.

A paper, by Dr. Hayward, on the ventilation of houses was afterwards read.

ARCHITECTS AND SANITARY SCIENCE.

WHEN present last evening at the Royal Institute of British Architects, after a lengthened absence from England, the pleasure afforded me by witnessing the presentation of the Royal Gold Medal by the hands of one long and greatly esteemed friend to another who has won the respect of all his colleagues, was followed by the opportunity of hearing the instructive paper on "Warming and Ventilation," read by Dr. Hayward, which I listened to with peculiar interest, the subject being akin to that treated of in my paper on "The Essentials of a Healthy Dwelling," read before the Institute, Jan. 30, 1862, and, partially so, to another, previously read, Jan. 21, 1852, which was translated and widely circulated in France, by order of the Government of that country, with a prefatory introduction, which in many respects is so confirmatory of Dr. Hayward's remark on the importance of his subject, that it may interest some to read the following quotation:—

"Cet ouvrage s'adresse à tous les hommes de bien, à tous les amis du pays. Il leur est offert comme un signe de la sollicitude qui s'éveille vivement dans une autre contrée pour l'amélioration du sort des classes ouvrières, comme un exemple dont ils sauront s'inspirer.

Quel est le médecin qui ignore pourtant que le defaut de lumière, un air vicié, un milieu humide, un entourage sale sont autant de causes qui séparées et à plus forte raison réunies, contribuent plus que toutes les autres à abréger la vie et à la rendre misérable, en affligeant ceux qui s'y exposent d'une foule d'infirmités personnelles ou héréditaires? Quel est le moraliste qui n'ait reconnu que l'âme humaine elle-même se dégrade sous l'influence prolongée de telles conditions? Quel est l'homme d'état qui n'ait gémi de voir les hôpitaux et les prisons encombrés des malheureux qu'elles engendrent?"

The observations made by Mr. Wyatt, referring to some remarks in Dr. Hayward's paper which were derogatory to architects, on the difficulty which they frequently experience in obtaining that consideration for sanitary subjects which their great importance demands, has recalled to my remembrance a resolution which I had the opportunity of proposing at a Congrés International de Bienfaisance held in Brussels in 1856, when the representatives of about twenty different countries, convened under Royal authority, unanimously declared

"it to be of public utility that the working classes be enlightened by all possible means in regard to the improvement and the keeping of their houses in good order. That the instruction of the young, in the labouring classes, ought to comprise all which relates to the cleanliness of their persons and their dwellings, to the benefits resulting from good ventilation, and the evils resulting from humidity. Lastly, that the study of the science of preserving health is one which ought to be rendered accessible to all."

In order to the carrying out of this resolution, the importance of sanitary science as an essential branch of a complete education, and most valuable to all classes, has been urged in this and other countries where education is felt to be of primary importance.

HENRY ROBERTS.

THE POSSIBLE STRIKE.

WE are requested by the Central Association of Master Builders to state that the assertion made by Mr. Broadhurst in our last impression (p. 451) that 9d. per hour had been promised to the masons, and "was part of the compromise accepted by the masons in settling the dispute of 1872," is utterly and entirely without foundation.

On Wednesday last a very large meeting of master builders from all parts of the country was held at the Westminster Palace Hotel, for the purpose of forming an association of the employers throughout the kingdom, in order to resist the demands being made by the men for an increase of wages of ½d. per hour. The meeting was presided over by Mr. Hannen, of London. In reference to a statement lately issued by the masons as to alleged promises on the masters' part to grant the rise asked for this year, it was said that the statement put forth was not true. Some of the employers urged that, if the masons of London called the men out from any firms, and commenced partial strikes as they did last year, the only way of meeting them and resisting the evil was to resort to a general lock-out simultaneously throughout the whole country. In consequence of the absence of some of the provincial firms through accident, it was resolved not to pass any resolution till the general opinion of the trade was taken. It was therefore resolved to call another meeting in about a fortnight's time.

In the evening of the same day, a crowded meeting of operative masons was held at the Falstaff Music-hall, Old-street, St. Luke's; Mr. Spencer in the chair, and eventually the following resolution was unanimously adopted:—"That this meeting of the masons of London having considered the letter received from the Master Builders' Association, desires to express its regret at the propositions therein contained, and pledges itself never, under any circumstances, to return to the one o'clock on Saturdays, and further declares its full determination to firmly adhere to the terms of the memorial sent in by the committee." The effect of the adoption of the above resolution is that unless the master builders concede the half-penny per hour advance on the 19th of July next, the whole body of masons will cease work on that day.

THE TRADES MOVEMENT.

Bristol.—The carpenters' strike is likely to assume a more extensive form. At a recent meeting of the men, they passed the following resolution:—

"That in the event of the employers, at their meeting on Friday next, not coming to an arrangement satisfactory to our united committee, they shall be empowered to call society men out of those shops where the employers have only given a partial advance."

The masters met at the Athenæum, and after talking the matter over for upwards of an hour, separated without arriving at any decision, the only resolution passed being to adjourn the meeting for a fortnight.——The Rev. Prebendary Percival has given a decision as umpire between the operative labourers of Bristol in all branches of the building trade and their employers, in reference to the rate of wages paid them. The men asked for an increase on the present pay, in consequence of the rise in the cost of the necessaries of life. Mr. T. Kelly and Mr. Crouin addressed the umpire on behalf of the labourers, who were stated to number 2,800; and Mr. J. Foster, Mr. Brock, and Mr. Yalland for the masters. Mr. Foster said that the state of the building trade was extremely dull at the present time, and he anticipated the dulness would continue. Mr. Percival's award by agreement between the employers and men, is to remain in force for a twelvemonth. The decision is as follows:—

"The College, Clifton, Bristol, June 2nd, 1873.

Having carefully weighed all the facts bearing upon the matter in dispute between the master builders of Bristol and the operative labourers employed in the Bristol building trade, so far as they have been made accessible to me, I have come to the conclusion that, whilst on the one hand the labourers may fairly claim a somewhat larger advance than a farthing per hour; on the other hand, the circumstances do not seem to warrant anything beyond a halfpenny.

Consequently, I hereby give it as my award that from the present date the labourers should receive an advance of a halfpenny per hour upon the rate of payment which was current on the 4th of February last.

(Signed) J. PERCIVAL."

Sheffield.—The Sheffield branch of the Amalgamated Society of Engineers have addressed a circular to their employers, stating that they find themselves compelled to place a higher value upon their labour, and they desire that the minimum rate of wages should be advanced from 32s., as at present, to 34s. a week, with the condition that those workmen who are now receiving 34s. or upwards per week should mutually arrange with their respective employers as to their future rate of payment. They also request that ordinary overtime should be paid at the rate of time and quarter for the first two hours, and time and half for all worked after; but in the event of working all night, time and half for the total number of hours worked as overtime. Should a workman be required to work on Easter Monday, Whit Monday and Tuesday, and the day following Christmas-day, he should be paid at the rate of time and half for each hour worked. Should any workman be called away from home between the hours of 10 p.m. and 6 a.m. on the following morning, he should be paid at the rate of double time for each hour worked; and if required to work between 12 p.m. on Saturday night and 6 a.m. on Monday morning, he should be paid at the rate of time and three quarters for each hour worked. The code of terms also sets forth that in the commutation of time each should be considered by itself; that all workmen required to work out shall be paid 6d. per day extra, if within two miles; if over two miles, and can return home at night, 1s. per day extra; if required to lodge out, shall receive 2s. per day extra, Sundays included; and where night-shifts are necessary, forty-five hours should constitute a week's work, at the same rate of wages paid to day-men for fifty-four hours. The men wish the concessions to take effect from Saturday, the 28th instant, and ask for a reply to their communication by the 12th. It is said to be certain that a strike will take place if their demands are not conceded.

THE NEW WORKHOUSE FOR WHARFEDALE UNION.

THE ceremony of opening the new workhouse for this extensive union has just taken place. The new building has been erected on about six acres of land, situated in the Newall Carr-road, about half a mile to the north of Otley. The block of buildings forms a conspicuous feature in the landscape for many miles round. In the centre of the site stands the main block, two stories high, and upwards of 150 ft. long, with a clock-tower surmounting the principal entrance. The entrance-hall divides the building into two wings, occupied respectively by the males and females, and on each side are the requisite apartments and rooms for the master and matron. From end to end of this block runs a central corridor, from which the various wards are readily reached. The aged and infirm inmates occupy the front portion, the children are placed in the two ends, and the ordinary able-bodied men and women have their rooms at the back. Opposite the principal entrance, and in the rear of the chief block of buildings, is a dining-hall, serving also as a chapel. Immediately adjoining are the cooking kitchens, larders, and other domestic offices. At the back of the building are paved yards, where the inmates may take exercise, and also sundry workshops, wash-kitchens, &c.; and still further in the rear stands the infirmary, also two stories in height, and upwards of 140 ft. long. In the centre of this block are the necessary officers' and administrative rooms, and on each side respectively are the male and female wards, the whole being well lighted and ventilated with windows on both sides. Running parallel with

the Newall Carr-road, and at right angles to the buildings already described, stand the entrance block of buildings, one story in height, and upwards of 160 ft. long. The group is set back some little distance from the road, and broken up in outline. The general entrance is through an archway, filled in with wrought-iron gates. Here are the porters' rooms, offices and rooms for the accommodation of the board of guardians on the one side, and for male and female vagrants and probationers' wards, &c., on the other. The whole of the works in connexion with the new workhouse will entail an expenditure of something like 14,000*l.* The contract for the buildings was let for 10,000*l.*, but to this must be added the cost of the boundary-walls, entrance-gates, and railings, the formation of a large culvert to convey the contents of a tributary of the Wharfe which flowed through the site, and sundry articles in connexion with the fittings and furnishing. The buildings throughout are erected of local sandstone, quarried from the Farnley Hall estates. The architects were Messrs. C. S. & A. J. Nelson, Leeds and Derby; and the contractors for the general works, Messrs. Boothman & Broomhead, of Leeds and Newcastle. The stoves and chimneypieces were supplied by Messrs. Heaps & Robinson, of Leeds, who also fitted up the cooking apparatus. The entrance-gates and railings were the work of Mr. J. Exley, of Otley; and Mr. M. Hobson, of Bramhope, acted as clerk of works.

SANITARY MATTERS.

Bradford-on-Avon.—A "report on the Drainage of Bradford-on-Avon, Wilts," by Mr. A. W. Estridge, C.E., has been issued in a printed form, by order of the local commissioners. (Day, printer, Bradford). Mr. Estridge gives an account of the existing drainage and sanitary condition of the town, which are very bad, although the town stands on elevated ground. The old midden and cesspool system prevails, and the nuisance is excessive. Sewage distributes itself in open channels, and saturates the ground. One closet for three, four, or five houses, is a common occurrence, and there are instances of even eight and more houses with but one closet for all. Mr. Estridge proposes a scheme of improvement for the interception of all refuse from the river; the collection of all sewage into one outlet; the obtainment of means for flushing; and the ventilation of the sewers; all at a total cost of 3,250*l.*, to be borrowed of the Public Works Loan Commissioners, entailing an annual outlay of only about 190*l.*, for thirty years.

Utilisation of Town Refuse.—A reprint from the "Journal of the Liverpool Polytechnic Society," March 17th and May 26th, 1873, has been issued, "On the Utilisation of Town Refuse, by G. F. Chantrell, Hon. Sec. of the Microscopical Society of Liverpool." It contains an account of Mr. Chantrell's Patent Refuse Collecting System, with diagrams of dust-boxes, charcoal filters, &c. The object of Mr. Chantrell's patent is to do away with open middens, substituting portable receptacles, reducing the weight of refuse one-third. It is related to the Rochdale system.

MEMORIAL CHAPEL AT CHISELHURST.

AFTER the funeral of the late Emperor of the French, the Empress determined upon having a mortuary chapel built, wherein to deposit his remains until the place where they shall finally rest has been selected. The plans of the proposed new building having been prepared by Mr. H. Clutton, architect, and approved of, some progress has been made in the work, which is being done by Mr. Brass, builder. The site of the chapel is immediately adjoining the Roman Catholic Church of St. Mary, at Chiselhurst, in a south-west direction. The Empress has just now privately laid the foundation-stone of the building; Prince Louis Napoleon accompanying his mother. The new chapel will be in the Mediæval style, the outer walls being composed of Bath stone, and the interior of Caen stone. The dimensions of the interior will be 12 ft. by 24 ft., the height being 18 ft. There will be three windows at the side, and one at the end, groined arches being employed in the construction of the roof. At one end of the chapel an altar is to be placed, and a recess is to be made at the side for the reception of a monument, or other purpose, at any future time. Immediately in front of the recess referred to, and in the centre of the building, the sarcophagus,—the gift of her Majesty Queen Victoria,—which will contain the body of the Emperor, will be built. The tomb will be of polished Peterhead granite, bearing the inscription, "Napoleon III. R.I.P." The pavement will be tesselated, and by cutting away a portion of the wall of St. Mary's Church an entrance is to be made to the chapel for the special use of the Empress, who will bear the entire cost of the new building. The granite to be used in the erection of the sarcophagus is not expected to arrive till August. The new chapel is dedicated to "Our Lady."

The coffin of the late Emperor now lies almost obscured by the floral decorations and other tributes of affection that continue to be placed upon it; among the more noticeable of which are some palm decorations recently sent from Italy by Cardinal Buonaporte.

OPENING OF THE NEW PIER AT REDCAR.

THE new pier which has just been completed at Redcar has been formally opened. The structure runs out from the shore at the east end of the town, in an east-north-east direction, a distance of 1,300 yards, and is directly in a line with Graffenberg-street. At the shore end are collectors' offices—one on each side,—it being intended that those who walk on the pier shall pay toll; under their roofs are ladies' and gentlemen's waiting-rooms. The width of the pier is 20 ft., with the exception of some forty yards or so at the extreme end, where it is considerably wider, the additional space being taken up with seats, which run round the end in a double row in the shape of a horse-shoe. These seats will accommodate about 600 persons, and are screened from the wind. They run round on the outside of the screen as well as the inside. The pier itself is supported on cast-iron piles, 9 in. in diameter, and the rock into which they are driven gives a good foundation. To these piles are attached iron columns, placed in pairs 30 ft. apart; and, slanting inwards, an additional stability is given by strong wrought-iron bracing. Upon the top of the piles are cast-iron spandrels connected transversely by the flooring timber joists. Along each side of the pier is a wrought-iron palisading, with recesses at intervals for seats, and at night it will be lighted with eighteen lamps. A landing-stage, to be available at all times of the tide, is in course of construction in connexion with the pier, for the use of passengers by the steamboats which ply along the coast, or those who engage the pleasure-boats. The original contract was 6,250*l.*, but the wind-screens and other extras will involve an additional expenditure of 1,000*l.* The capital of the company was 10,000*l.*

Messrs. J. E. & A. Dowson, of London, were the engineers; and Messrs. Head, Wrightson, & Co., of Teesdale Ironworks, South Stockton, were the contractors.

UNVEILING OF SIR ROBERT PEEL'S STATUE AT HUDDERSFIELD.

THE ceremony of unveiling the statue of Sir Robert Peel, in St. George's-square, Huddersfield, already alluded to, was performed, by Lord Houghton, under most favourable circumstances. It should be stated that the money was subscribed for this statue more than twenty years ago, and that, in consequence of internal dissensions among the inhabitants of the town over matters of detail, the funds had remained in the hands of the bankers, being substantially increased from time to time. In 1869 the committee offered the erection of the statue to competition. Four London sculptors of eminence sent in estimates, including Mr. Theed, and the work was eventually intrusted to Mr. Theed at the sum of 950*l.* for the statue and 50*l.* for the pedestal. The statue, which in itself is 9 ft. high, is cut out of Sicilian marble, single block, and weighs 3½ tons. The likeness has been considered, both by the present Sir Robert Peel and Mr. Cardwell, to be successfully obtained. The robe is that worn by the Chancellor of the Exchequer. In his left hand the deceased statesman holds a scroll, to which he is pointing with the right. Including the pedestal, the statue is 20 ft. high. The pedestal has been executed by Messrs. Macdonald & Shield, of Aberdeen, in grey Aberdeen marble, and some two or three Yorkshire stone steps have been added by Mr. Cocking, architect, Huddersfield, to increase its elevation. In front of the pedestal there is a bronze relief of "Feeding the Hungry," also from a design by Mr. Theed, which is a reference to the benefit conferred upon the working classes by the repeal of the Corn Laws. At the back of the statue is the celebrated extract from a speech by Sir Robert Peel:—

"It may be that I shall leave a name sometimes remembered with expressions of goodwill in the abodes of those whose lot it is to labour and to earn their bread by the sweat of their brow, when they shall recruit their exhausted strength with abundant and untaxed food, the sweeter because it is no longer leavened with a sense of injustice."

The ceremony of unveiling was made the occasion for a public demonstration, and this took place with the most successful result.

SCHOOL BOARD FOR LONDON.

AT the Board meeting, held in the Sewers Court, at the Guildhall, on the 11th inst., Mr. Charles Reed, M.P., chairman of the Works Committee, brought up the following report, which was agreed to:—

1. The Works Committee have invited tenders for the erection of a school, to provide accommodation for 1,136 children, on the site in Lower Mansfield-place, Marylebone. The following were the respective amounts:—

Manley & Rogers	£12,677 0 0
J. Grover	12,183 0 0
W. Crockett	11,650 0 0
Kelly, Brothers	11,630 0 0
Dove, Brothers	11,587 0 0
Scrivener & White	11,399 0 0
W. H. & J. Mansbridge	11,336 0 0
R. Mann	11,187 0 0
T. Niblett & Son	10,140 0 0

The Board architect, however, was subsequently instructed to make certain modifications in the plans, so as to reduce the cost of the building, and a revised tender has now been obtained from Messrs. T. Niblett & Son, of No. 37, Birkbeck-road, Hornsey-rise, N., amounting to 9,556*l.*, which the committee recommend the Board to accept. [Cost of site, 2,780*l.*; cost of building per head, 8*l.* 8s. 2d.]

2. Tenders have also been invited for the erection of a school, to accommodate 566 children, on the site in George-street, Marylebone, the amounts of which are as follow:—

J. McLachlan	£6,110 0 0
F. Mark	5,994 0 0
Merritt & Ashby	5,910 0 0
G. S. S. Williams & Son	5,872 0 0
Dove, Brothers	5,848 0 0
G. Wall	5,800 0 0
Scrivener & White	5,606 0 0
J. Kirk	5,555 0 0
T. Niblett & Son	5,440 0 0

In this case, also, it was considered necessary to make some reduction in the cost of the building, and the committee now recommend the acceptance of the reduced tender of Messrs. T. Niblett & Son, of 37, Birkbeck-road, Hornsey-rise, amounting to 4,790*l.* [Cost of interests already purchased, 4,703*l.* 5s.; cost of building, per head, 8*l.* 9s. 3d.]

Mr. E. R. Robson is architect of both these schools.

DR. LANKESTER AND THE DEMOLITION OF DWELLINGS.

AT the last meeting of the Camberwell Vestry, according to the *South London Chronicle*, a report of the Sanitary Committee of the vestry was read, which recommended,—

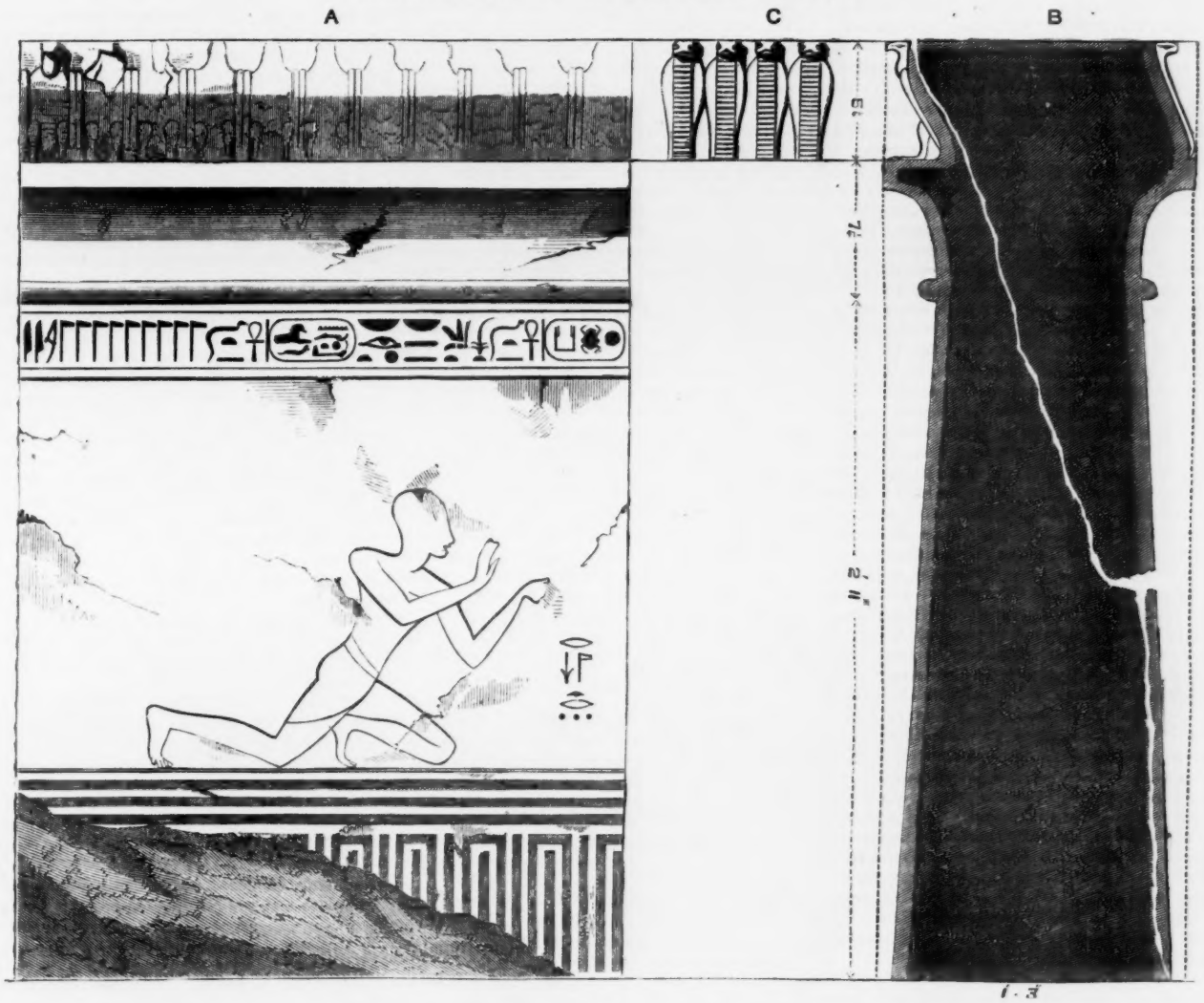
"That the vestry clerk be instructed to write to the vestry of St. James's, Westminster, expressing regret that the medical officer of health for that parish should have given evidence against the vestry's order for the demolition of houses unfit for human habitation, and in opposition to the testimony of three other medical officers of health, and which order was confirmed by the dismissal of the appeal with costs."

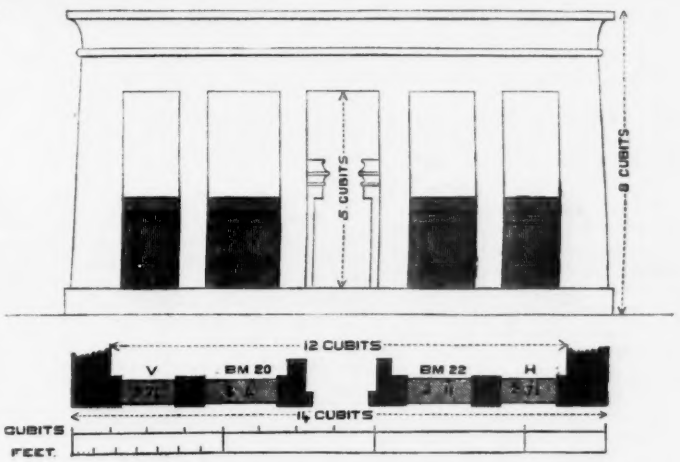
The houses in question were in Berkeley-court and Alpha-street.

After some discussion, in the midst of which Dr. Lankester, the officer of health for St. James's, was not without his defenders, the motion for the adoption of the report and recommendation was agreed to with five dissentients.

There must surely be some misunderstanding here, as we do not think it likely that authorities such as Dr. Lankester, Dr. Liddell, Dr. Iliff, and Dr. Bristowe, would so vitally differ in opinion on a subject fairly and equally laid before each and all of them. Mr. Reynolds, the Camberwell surveyor, went with the majority in the case.

RESTORATION OF AN EGYPTIAN TEMPLE.





Sketch Elevation of Temple, and Plan of Front.

A Sculpture on the inner face of the intercolumnar wall lately brought to England by Miss Harris.

B Section of an intercolumnar wall, measured and drawn from those in the British Museum. The white line shows the fracture that was occasioned by an attempt to divide the stone into two pieces. The part on the right of the white line does not exist in Miss Harris's slab. The lighter margin of the contour of this section shows the extent of the smooth surface, the darker shade the surface worked with the pick, proving that these stones were most accurately joined to the columns, the probable width of which is indicated by the dotted line.

C Shows the appearance of the cobra snakes in the front view, taken from the intercolumnars in the British Museum.

This intercolumnar wall is precisely the same height and section as those in the British Museum, Nos. 20 and 22.

RESTORATION OF AN EGYPTIAN TEMPLE.

OUR drawing represents a slab of hard stone, perhaps basalt, lately brought to England by Miss Harris, of Alexandria. It is 2 ft. 7¼ in. wide and 4 ft. 0½ in. high. At the top is a row of eleven vultures. Lower down is a single line of hieroglyphics, which may be translated, "The king's prenomen, living for ever; king of Upper and Lower Egypt, lord of the land, lord of the buildings, Nectanebo, living for ever, beloved of all the gods." Under this inscription is the figure of the king on his knees, looking towards the spectator's right hand, presenting some offering, which is no longer visible. Under the place where the offering was once represented are a few hieroglyphics, the name of the offering, probably frankincense. Below the king is a broad ornamental border.

This slab, from its shape and sculpture, lets us understand that it was made for a dwarf intercolumnar wall, and was part of a small temple, which, from the known proportions of the Egyptian temples, we may suppose was about 14 ft. high. Our interest in the slab is increased by the knowledge that we have in the British Museum two other slabs or inter-columnar walls, which probably belonged to the same diminutive temple, while there is a fourth now in Bologna, but found in Rome, 1709, of which there is an engraving in Ficoroni's "Vestigia di Roma," published at Rome, 1744.

The Harris slab (H) has been split in half, and therefore shows sculpture only on one face; those in the British Museum being nearly entire have sculpture on both faces. From them we learn that we exhibit the back of the slab H, which faced towards the interior of the building; because in all cases where the rows of vultures and of cobra or hooded snakes are represented on these dwarf walls, the vultures appear on the surface towards the interior, while the snakes are always on the outside as guardians of the temple. From this circumstance, and that the figure of the king is looking towards the right, it is quite certain that the Harris slab occupied the intercolumnar space marked H on the plan, or the right-hand corner of the portico viewed from the outside. Of the two slabs in the British Museum, the one marked 22 occupied the next intercolumnar space, that on the right-hand side of the entrance, and No. 20 that on the left-hand of the entrance. The slab marked V on the plan, on the left-hand corner of the portico, is the slab now in the Museum of Bologna. Thus we have two slabs for each side of the door; and if we suppose that this little temple had four columns, it will have had, with its two side walls, five intercolumnar spaces; one of these was the doorway, and four were filled with the four above-mentioned slabs.

The temple, as we have said, was about 14 ft.

✠

high, as it stood on a floor, or base, and with its lateral walls, nearly 25 ft. wide. Now Herodotus (ii., 175) tells us that he saw at Sais a small monolith temple, of which the outside front measure was 14 cubits in width, and 8 cubits in height, and that the inside measure was 12 cubits wide by 5 cubits high; or, if we turn these measures into English feet at 21 in. the royal or longer cubit, then the outside measure will be 24½ ft. by 14 ft., and the inside measure 21 ft. by 8 ft. 9 in. Herodotus thought this little temple of one single stone, as it was declared to be, was as remarkable a work of art as any of the great temples of Egypt. From the measures furnished by Herodotus we learn the thickness of the outside walls, which were of 1 cubit each, and also the thickness of the entablature and floor united, which were together of 3 cubits. We include the floor, since, if the temple seemed to Herodotus to be of a single block, it must have stood on a floor of its own. Let us, therefore, draw the front of a temple according to the known proportions of those in Egypt, giving to it Herodotus's measurements, with four columns and an entablature, all of suitable thickness, and giving to the floor what remains of its height which will be about three-fourths of a cubit. With this restoration of a temple, we shall then find that our four slabs supply us with the four intercolumnar spaces of the required size, and we may say with confidence that they formed part of the small temple described by Herodotus. It was not, indeed, a monolith temple, as he was told, but each wall and each column may have been of a single stone, and the whole so squared and fitted together that the joints were not seen.

The earliest name on these slabs or intercolumnar walls is that of Pharaoh Hophra, or Psammetichus III., who reigned about B.C. 591-566, about 100 years before Herodotus visited Egypt. Hophra, we must suppose, left the ornamental sculpture unfinished. This was very often the case with the Egyptian buildings. Hophra's reign was followed by civil war, then by the Persian occupation of the country, and it was not until 100 years after Herodotus's visit that the sculptures on the other slabs were finished in Nectanebo's quiet and prosperous reign of eighteen years.

The Museum has also two small obelisks of black basalt, which, when perfect, may have been about 12 ft. high, and when set on pedestals would be of the right height to stand as ornaments in front of this temple. They bear the name of Amyrtæus, a king who was reigning when Herodotus was in Egypt, during an interval of liberty gained from Persian domination.

Our restoration of the temple has the stones which are now in Europe distinguished by a dark shade.

SAMUEL SHARPE.
JOSEPH BONOMI, *Del.*

NOTES FROM AMERICA.

Texas.—The most delightful work, next to a survey on the London, Chatham, and Dover Railway in England, has been to the writer—a short trip in Texas. The natives semi-civilised; the country filled with superstitious legends, but abounding with some of the most beautiful scenery that can be imagined or wished; the land fertile; the climate in the autumn most invigorating. The towns are laid out on the Spanish system—a plazza, or a broad green; a town-hall, court-house, and in the centre a gaol. Magnificent trees shade the whole square, and the singing-birds render the scene most delightful. The streets are lined with teams laden with cotton and hides, and, what is more, silver and gold to handle,—a pleasant thing after the ragged, greasy greenbacks. But the scenes on the square are various. On one corner a group of niggers singing, heavily laden with the curse of the world—"bad whisky;" a crowd of "*cow-boys*" selling hides, and swearing in a manner a Texan alone can do. Then the never speculating Yankee, perched on an old box, selling in a manner after the fashion of a Sheffield Cheap John. Gambling seems to be a commercial pursuit, and a hell is fitted up gorgeously: the drinking-bar, with its "*chemist*" retailing the vile poison that maddens the brains of the gambler; the roulette-table, the wheel of fortune, which wheedles the nigger's money to the last cent.; the faro bank and other card-tables loaded with gold and silver; the speculators investing in games which your writer never heard of, and none the worse for not knowing; and all the time a harp and violin are scratching forth music. But emigration, it is hoped, will eradicate all these evils, and allow the country to be peopled with a respect for the Supreme Being, who has formed a country, indeed, of milk and honey, if labour be properly and commercially applied. Waco is a county town of about 3,000 or 4,000 inhabitants, the best town the writer has visited, full of enterprise. A neat suspension-bridge of nearly 600 ft. has been erected across the Brazos River; four churches, good school-buildings, fine stores, and several banks; also a railway terminus. St. Louis and Chicago are about building two lines of railway for the purpose of carrying the cotton from Texas; and Texas, I think, will be the real commercial State of the southern parts of the United States.

Kansas.—Timber is very scarce in these prairie countries, and is only found near streams and ravines: so fuel is very scarce, and as a substitute the husks and Indian corn are used, which make a fine glowing fire. In the unsettled portions of the prairies, far away from the settlements, are "trails" running in every conceivable region along the "divides" worn through the tall grass by the hoofs of the bisons; and by watching these ugly-looking animals from a distance, they can be seen travelling like a single file of dairy cows returning home at night from pasture. Kansas is fast filling up, and a good many towns are now built, which at the time of the American War were nothing but prairie lands. The sunsets are most beautiful, and can hardly be pictured by pen. The balmy nights!—but the loneliness is terrible. And, oh, the wind in an open prairie! it can be only likened to a storm at sea. The richest timbered country is Southern Kansas, but the best watered are Northern Kansas and South Nebraska, being easiest to farm; but better protection is required of the United States military for the settlers from depredations of the Indians.

QUERCUS.

MEMORIAL BRONZE STATUES OF THIRTEENTH, SIXTEENTH, AND NINETEENTH CENTURY SCOTCHMEN.

SIR,—It is a curious fact that we have at this time three bronze statues in embryo intended to honour the memory of three representative Scotchmen, three centuries dividing the career of the three. The last and most likely to be soon erected in Edinburgh is that of the present period, in which Livingstone so graphically illustrates the "derring do" of the heroic Bruce, and the stern candour of Knox, "who never feared the face of man."

The artistic skill of Mrs. D. O. Hill has enabled her in fact to produce such a statue of Livingstone as rolls the three three-century divided Scotchmen into one. This life-like statue, now proposed to be cast in bronze, is truly suggestive of all that is good and great in this most heroic of the Scottish kings,—born 1274, and died 1329. And there is also vividly shown the fiery zeal of the great Scotch Reformer, for enlightening his rude barbaric countrymen of the period in which he lived,—1505-1572. Even viewed in such a light, this graphic Scottish statue of the great missionary explorer of African wilds cannot satisfy either the Scottish people or their visitors, when they gaze upon the questionable tower reared to honour the memory of Wallace, and when they too plainly see the unquestionable dishonour done to the memory of Knox at his very grave, where the grim sarcastic leaden statue of Charles II. on horseback rides roughshod over all the associations of the spot. Statuesque memorials of both Bruce and Knox will yet be erected in the style and costume of their respective periods. Dr. M'Crie, in his Life of Knox, says,—"A Popish author has informed us that Knox was gratified with having his portrait drawn, and has expressed much horror at this, seeing he had caused all the images of the saints to be broken." There are even Presbyterians of our day who hold that "Protestant idolatry is manifested by this desire for a statue to John Knox in Edinburgh," yet such have not been able even to rear

"The taper spire that points to heaven"

over the stunted floreal pinnacles of the Knox Kirk, built some twenty years ago, alongside the old house of Knox, so prominently jutting into the grand vista east and west of the old historic High-street. Surely, if the house and kirk of Knox are to stand where they are, the modern kirk should be ornamental, and the old house saved from its venerable uncleanliness.

J. K.

NATURAL HISTORY MUSEUM.

I HAVE only just seen in the *Builder* of the 4th of January last Mr. Waterhouse's design for this building, and I regret to learn, by your editorial notice, that from motives of economy the two central towers of the façade are to be omitted. They appear to me a principal feature of the design, and to omit them will destroy the symmetry of what promised to be a handsome and successful building.

I presume it is not suggested that Mr. Waterhouse's design is of an unusually costly character, but because the price of work has risen (I suppose from the natural laws of supply and demand) we are to pare down and spoil a public building.

We are told sometimes that the rise in prices is an evidence of our wealth. At all events, we are the wealthiest nation in the world, and were never more prosperous than at the present time.

But, sir, a parsimonious policy is not always cheapest in the end. On this very same site ten years since we erected a building, very substantially, on a cheap plan, but which was so inveterately ugly that the public would not stand it, and the Government was compelled, though resisting to their utmost, to pull it down.

Look, again, at our National Gallery, where the unfortunate architect was so pinched and hampered about cost that he could only give us (no fault of his) a building that we are ashamed of, and which we have long ago decided must come down.

But, sir, here is a consoling reflection for the authorities, and which I hope will weigh with them, regarding the matter from a £. s. d. point of view.

It must be twenty years ago that we found that the British Museum was full to running over, and that an additional building must be provided to hold our collections. For twenty years we have been debating and discussing about this additional building, and at last we have decided on it. Well, then, have we not saved twenty years' interest on our outlay? Say only at 3 per cent. per annum, there is a saving of 60 per cent. I am sure, sir, that the authorities will appreciate this, and I yet hope that (accepting the fact of the rise in prices which the rest of the community are compelled to accept), they will take 15 per cent. out of the 60 saved, and give us the building as designed by the architect, unmutilated.

OLD KENSINGTON.

A GIGANTIC BRIDGE OVER THE FORTH.

AMONGST the several railway and other Bills which have been before the Parliamentary Committees during the present session, one is in connexion with the construction of a stupendous railway bridge over the Firth of Forth, at Queensferry, at a proposed outlay (including the railway), of 1,250,000*l.*, being something more than four times the cost of the bridge over the Tay, now in course of construction, and which up to the present time has been regarded as the largest bridge in the world. As the Bill for the proposed bridge over the Forth received the sanction of the Committee of the House of Commons last week, a notice of some of its chief features becomes interesting. The proposed bridge, which has been designed by Mr. Thomas Bouch, will be no less than 150 ft. in height, and will contain nearly 100 spans. The largest span in the centre will be 1,550 ft. in width, or nearly a third of a mile in extent, dimensions which are without a parallel for any similar piece of architectural construction, and the smaller openings or spans will all be 150 ft. in width, being considerably beyond the average dimensions of the largest spans in ordinary bridges. The highest engineering evidence on the design was laid before the Parliamentary Committee, and amongst the engineers of eminence who bore testimony in favour of the proposal, were Mr. G. P. Bidder, Mr. Hawkshaw, Mr. Barlow, and Mr. Harrison, all of whom deposed as to the practicability of its construction, the sufficiency of the estimates, and as to its safety and suitability for carrying railway traffic. On these points, a joint report, signed by all the above-named engineers, was laid before the Committee, in which they state that having examined the plans of the proposed bridge, in connexion with storms of wind, as well as the effects of passing loads over it, and also in regard to temperature, they all agree in being satisfied that the bridge, when completed according to the designs and dimensions, and with the materials submitted to them, will be found amply sufficient not only for the safety of

the ordinary traffic, but also to meet the strains due to extreme gales of wind. As to construction, the engineers in question state that the most important point is the sufficiency of the foundation and anchorage, and in reference to that question the information afforded them gives them complete confidence; whilst having regard to the varied and powerful means which are now at command for the erection of such structures, they believe that the execution of this bridge, although of unusual magnitude, is quite practicable, and capable of being carried out with success by modern skill.

THE PUBLIC BUILDINGS OF BUCHAREST (TURKEY).

AN interesting report has just been published, regarding the improvements made in the public buildings of Bucharest, also giving information relative to other improvements effected in the city. Bucharest covers a space of more than twenty English square miles, and has been gradually built haphazard, every man having placed his house as he pleased, without the slightest regard to the position of the dwellings of his neighbours. This neglect of the unities of construction has formed an agglomeration of buildings which is certainly peculiar. Considerable progress has been made of late in paving the streets of the city, and the principal street is now paved with Aberdeen granite, and cubical stones from Italy, and is kept moderately well watered in summer. This street (called the Podo Mogochoi) contains the principal shops and hotels, many of the best private houses, the Prince's residence, and the National Theatre, one of the largest buildings in the town, the whole being interspersed with hovels and unbuilt spaces, the effect of which is anything but seemly. Of late years great progress has been made in building new houses in Bucharest, but this has scarcely kept pace with the increase of the population. What is termed "The Palace," was built nearly half a century ago, and was sold to the Government, having been originally intended for a private residence. Its only redeeming feature is said to be the throne-room. Prince Charles of Hohenzollern has done much towards rendering his habitation internally comfortable by introducing improvements from time to time; but at best it is not a very regal residence. It has been attempted to convert a monastery on the outskirts of the city into a summer residence for the court, but hitherto this attempt has not been altogether successful. There are 100 buildings in Bucharest which are used as churches, but none have any pretensions to architectural beauty, or even to much antiquity. There are ten synagogues, of which the largest is a modern building erected at considerable expense, and decorated in a somewhat pretentious fashion inside and out, after the Saracenic style of the new Jewish temples of Western Europe. The Academy is the most imposing of the modern buildings of Bucharest. It forms one side of the commencement of a boulevard, which it is proposed to carry through the town from east to west. This edifice contains the university, which is divided into four faculties,—philosophy, law, medicine, and the sciences; and possesses a good laboratory and collection of physical apparatus. The large theatre of the university is occupied by the senate during the Parliamentary session. The Academy also contains a public museum of antiquities and natural history. Bucharest boasts two public gardens of considerable size, which are of comparatively recent construction. One is in the centre of the town, is about a mile in circumference, and is principally resorted to by the townspeople who have no carriages. The other public garden is just outside the town, and is the fashionable drive. Amongst the new buildings, a handsome edifice has been erected on the boulevard for a hotel, which will eclipse all its rivals in point of size and imposing appearance. Bucharest has lately been lighted by gas. The water supply drawn from the Dimbovitza is partly pumped by steam, and distributed through iron pipes to some public fountains and private dwellings; but for the most part it is doled out by small carts in a filthy state, and at considerable expense. The municipality, however, has for some time been in treaty with foreign companies for an unlimited supply of filtered water, the want of which is much felt. The sanitary state of the city is far from satisfactory, and the authorities are not so active as they might be in introducing improvements in this direction.

ST. MARY'S SCHOOL, HULME, MANCHESTER.

THE foundation-stone of this school was laid on the 6th inst. The school will have accommodation for 131 scholars. The building consists of a school-room, 36 ft. by 19 ft. 6 in.; and two class-rooms, 18 ft. by 14 ft.; also lavatory and cloak-room, &c. The elevations have a hipped gable to the class-room, and a hipped gablet over the centre bay, the windows in both these rising higher than the others. All the windows have arched heads; and buttresses divide the elevation into bays. The principal elevation has a hipped gable, from the centre of which rises an ornamental chimney-stack having an inscription stone in the centre of gable. The whole of the walls are faced externally with white header bricks, with arches, string-courses, and other dressings of stock bricks. The interior is of selected bricks. The rooms are warmed by open fireplaces, and the alternate windows have part opening for admitting fresh air, while the vitiated air has its exit through openings in the ridge, the roof being a high-pitch open to the apex, and plastered between the principals. Mr. George Napier Hulme is the contractor, under the superintendence of the architect, Mr. J. Lowe, Manchester. The total cost, including boundary walls, will be about 830*l*.

THE VENTILATION OF THE SEWERS OF LIVERPOOL.

SIR,—In a recent issue you favoured us with an extract from the report of the borough engineer on the ventilation of the Liverpool sewers recommending "the introduction of open gratings in the streets, and the carrying up of a pipe not less than 4 in. diameter, from every soil-pipe, to a point above the roofs of the houses, so that in the districts where these water-closets exist, the draught may be down the street ventilators and up the soil-pipe shafts."

In a large borough like Liverpool, it is important that the scheme adopted should be effectual, as small boroughs may be induced to follow the example of their larger brother; and in that view I propose to discuss its merits.

The open gratings will provide for the introduction of fresh air, but in some cases they will act as outlets, according to levels and other local circumstances.

The proposed outlets by the house-drains are however open to very serious objections:—

1st. The gases from the sewers will take the shortest route, and rush into the houses, when the pan or valve closets are used, instead of passing up the 4-in. outlets as proposed.

2nd. By this scheme every house will be in connexion with every other house, as now.

3rd. It will have a tendency to invite the entry of sewer gases into the badly-drained houses, and so increase the death-rate rather than diminish it.

In most schemes for ventilation, the chief object has been to disconnect the house-drains (*for ventilating purposes*) from the main sewers, and to prevent the sewer gases from entering the houses; but in the scheme proposed, there is an ingenious but expensive attempt to do that which most sanitary authorities have condemned.

The great objection always raised against sewers, that there is no isolation, will by this scheme be still further increased, as the current of the gases will be in the direction of the houses from the sewers of deposit, and if there be the slightest defect in the house-drains or the soil-pipes (a very common thing), *they will become outlets into the houses* from the main sewers. Further, the principle of ventilating main sewers by the house-drains is radically wrong, and should in no case be adopted.

Sewers should be ventilated, as they have been in other towns, *entirely separate and distinct from the house-drains*.

House-drains should also be ventilated, separate and distinct from main sewers, by 4-in. pipes from the soil-pipes, or by other means.

We are told that 18,000*l*. are to be expended on ventilation, but I trust, in the interest of sanitary science, the proposed scheme will not be adopted.

JAMES LEMON,
Borough Engineer, Southampton.

Leicester Municipal Buildings. — The drawings submitted are now on view. We are asked to mention that the author of the design under motto "Simplicity" gave no address, and therefore could not be communicated with.

LONDON SCHOOL BOARD SCHOOLS, OLD FORD-ROAD.

THESE schools, which have been built near the Old Ford Station, will shortly be opened.

The nominal accommodation is for 720 children, but the actual number which could be accommodated is 841, allowing 8 ft. superficial of floor-space for each infant, and 9 ft. for each girl or boy.

Owing to the position of the site the entrances to all the divisions of the schools were obliged to be from the same road, but they are separated as far as possible from one another.

The general schoolrooms are 22 ft. wide and 45 ft. long, with windows on each side, which allows a current of air across the rooms and an equal distribution of light. The window-backs in the wall opposite the desks are 8 ft. high, to allow of maps, &c., being hung below them. The windows behind the desks are the usual height above the floor.

The ceilings throughout are plastered to a level surface, no beams being visible.

The general arrangement of the ground floor will be seen by the accompanying plan. The first and second floors, for the boys' and girls' schools respectively, are similarly arranged, with the exception that there are two class-rooms at the ends of the general rooms, each 20 ft. by 18 ft.

Cap and bonnet rooms and lavatories are placed at the entrances to each department, on a level with the general schoolroom.

A classroom for drawing is on the second floor, entered by the girls from their schoolroom, and by the boys from their staircase.

There is a room for the master or mistress on the first floor, immediately over the managers' room.

The staircases are of Yorkshire stone, with wrought-iron handrails.

The desks and seats for the children will be arranged in pairs. The infants' and babies' rooms each have galleries with low backs to the seats.

The upper parts of the doors between the school and class rooms are glazed, to enable the head teachers to supervise the whole of their respective departments.

Captain Douglass Galton's ventilating stoves are placed in the general school-rooms; each story is 14 ft. high from floor to ceiling, and the walls are coloured a light green tint. All the windows have straight heads with sashes double hung.

There is a covered play-shed in the infant's playground, paved with Wright's tarred paving, which is laid in all the playgrounds. The building is faced with picked stocks, with red brick arches and diapered patterns of red, white, and yellow bricks to the gable-ends, and Bath-stone dressings are used in the window and door-heads.

The contract for the building, including fittings for heating and lighting, was taken for 4,987*l*. by Mr. Tarrant of the New Kent-road; this gives about 5*l*. 18s. per head, taking the actual accommodation at 841 children.

The architects are Messrs. Henry Jarvis & Son, of Trinity-square, Southwark.

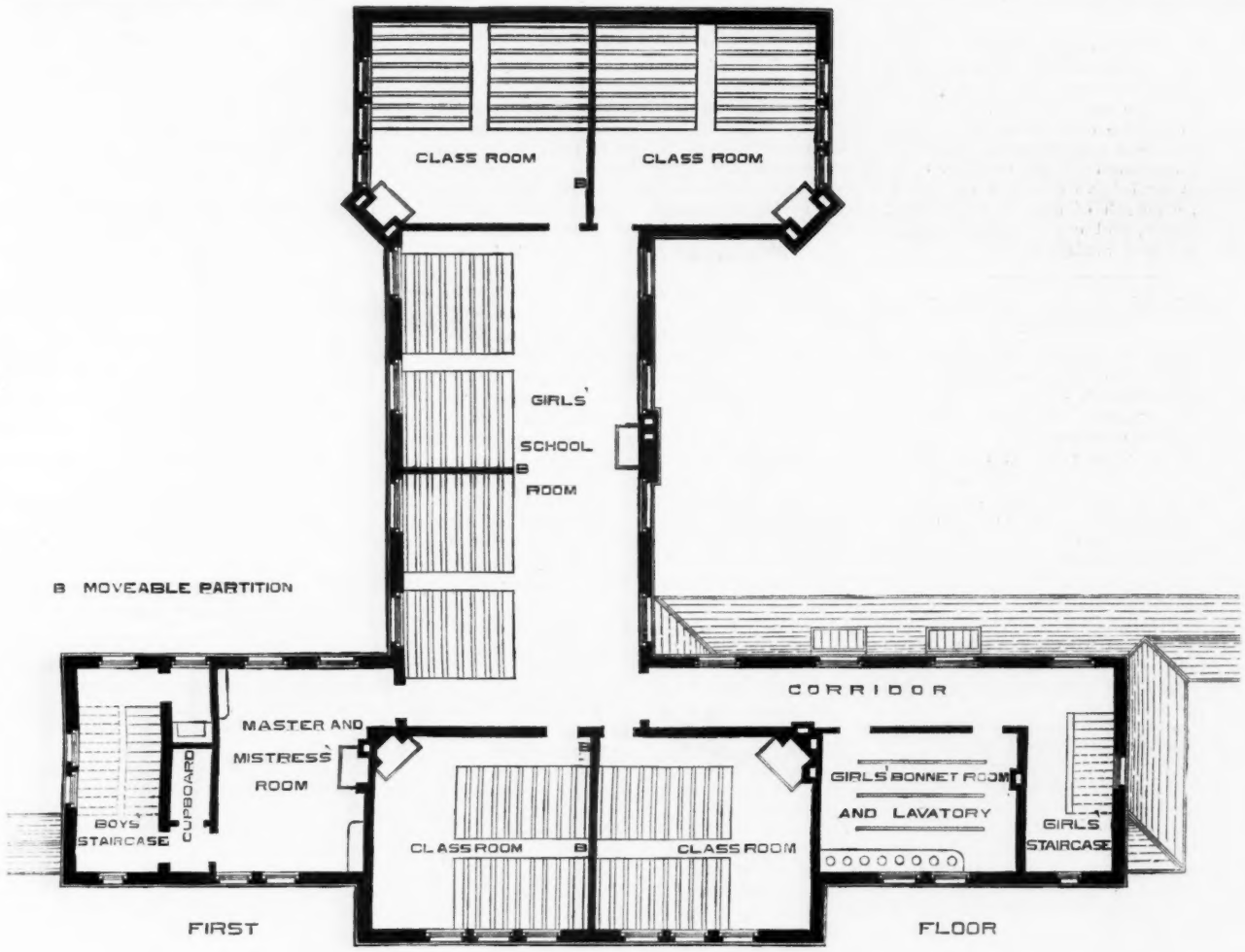
USEFUL NOTICE.

DR. DUDFIELD, the medical officer of health of the parish of St. Mary Abbott's, Kensington, has issued the following sanitary notice, which may be usefully read elsewhere:—

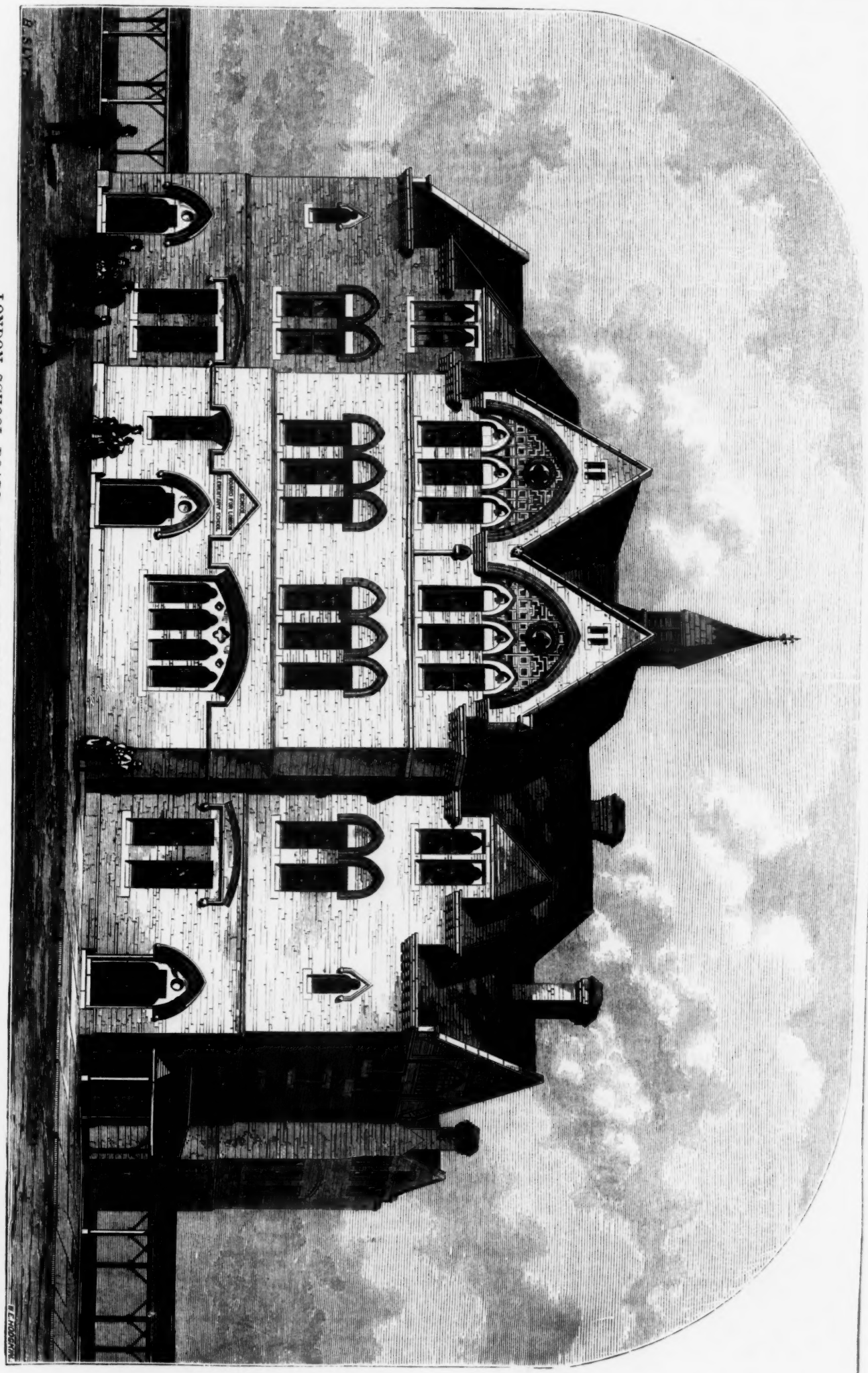
"Parishioners are earnestly requested not to deposit animal or vegetable refuse in their dust-bins, the decay of such matters, especially in hot weather, when few ashes are made, causing offensive smells injurious to health. All such refuse being, after slight drying behind the fire, combustible in ordinary grates, may and should be burned, small quantities being placed on the fire at a time.

Parishioners are further requested to have their water-cisterns cleansed frequently, and particularly during the summer months. The waste-pipe, if connected with a drain or soil-pipe, should be effectually trapped, otherwise the water will become polluted by foul air, to the great danger of health and life. In all cases, when practicable, however, the waste-pipe should be abolished, and an overflow or warning pipe substituted. Cisterns should be carefully covered, to exclude dirt. Water-closets should have an independent water-supply. A ventilating-pipe, at least 1½ in. in diameter, should be arranged so as to carry off into the open air the gas generated in the soil-pipe of the water-closet and the waste-pipe of the sink. The main drain of the house should also be ventilated and trapped, so as to prevent the entrance into any part of the house of sewer-gas.

Impure air and polluted water being fertile sources of disease, especially of diarrhœa, which is so fatal in summer, and of communicable diseases, such as typhoid fever, &c., the importance of the above recommendations must be obvious."



SCHOOLS IN THE OLD FORD ROAD, FOR THE LONDON SCHOOL BOARD.—*Plans.*



LONDON SCHOOL BOARD SCHOOLS, OLD FORD ROAD.—MESSRS. HENRY JARVIS & SON, ARCHITECTS.

STRENGTH OF CEMENT.

PROFESSOR BAUSCHINGER, of the Polytechnic School of München, has lately made experiments (in the technical laboratory of that institution) with mortar of Perlmosen Portland cement and water-lime; and he publishes his results in the *Zeitschrift des Bayer. Ingen.- und Arch.-Vereins.*

Cubes of pure cement, as well as of mixtures of one part cement with sand or rubble up to five parts, were submitted to pressure. The resistance of pure cement was found to be greater than the mixture of the proportion of 1 : 5; it diminishes very slowly, even if as much as three parts sand (even coarse rubble) are added. Cubes of water-lime and coarse rubble were found to resist pressure best, mixed in the proportions of 1 : 2 or 1 : 3; pure water-lime offering the least resistance. The resistance to pressure in a mixture of the proportion of 1 : 4 is nearly as great as in that of 1 : 1.

Cubes of brickwork, made of common bricks and mortar of one part water-lime and three parts fine sand, after hardening for ninety days, were next tried, when it happened that the mortar remained firm, whilst the bricks were crushed.

Slabs of one part cement and two parts fine sand, about 1½ in. thick, also, after setting for ninety days, were likewise experimented upon, and the results showed that the strength per square unit increases with the dimensions of the cross section, but it is also determined by its form, and diminishes somewhat with the thickness of the slab.

Similar experiments with cement prisms likewise showed that the strength of rupture of cement increases if it is mixed with sand in the proportion of 1 : 3, and even that of mortar mixed in the proportion of 1 : 4 is greater than that of pure cement.

In the trial with slabs made of one part cement and two parts fine sand it was found that they possess equal strength whether they rest on all four corners or only on two edges, and that the resistance was nearly proportional to the square of thickness of the slabs. The slabs were tried after hardening for 105 days; the prisms after 90 days.

Professor Bauschinger intends publishing an empirical formula as soon as a sufficient number of experiments are available for the purpose.

THE STORY OF A CHEST OF DRAWERS.

BY A CABINET-MAKER.

"Trade is the golden girdle that encircles the globe."

DURING the past twenty years the attention of the public has been greatly directed to manufactures of all kinds. One result has been that during that time marked progress has been made in taste. The producers in the different trades have been stimulated to greater variety and excellence in their designs, and their exertions are receiving substantial appreciation and encouragement. This interest extends itself even to the raw and uninviting materials, and to the processes of manufacture, and hence our Industrial Museums. Availing ourselves of this feeling, we propose briefly to trace the history of an ordinary chest of drawers, made of mahogany and fir.

Let us glance at the procuring of the materials. A number of wood-cutters have tracked their way into a dense forest of the West Indies, and there at the river-side they have reared their rude hut. Around them the scene is one of great life and beauty. Bright birds and flowers, and rainbow hues, the serried trunks of stately trees entwined by green tendrils, and over all the feathery palm-tree,—"a forest above a forest." The wood at times resounds with the cries of its many tenants, and anon the most solemn stillness prevails. Amid all the wood-cutters resolutely proceed with their arduous work. They first select a good mahogany tree near the riverside, and by the aid of axe and saw and strong arm they lop off the branches and cut through the compact trunk, which is generally from 12 ft. to 15 ft. in circumference. The logs are then floated down the river to the nearest port, and then the lumberer or wood-cutter can count his gains. If the shippers purchase them for Britain, they are sent to Liverpool, the principal market in this country for mahogany and similar woods. Here a brisk and profitable trade is carried on by wood-brokers. The mahogany logs are assorted into lots, catalogues are sent throughout the kingdom, and in a week after a company of tradesmen from the various towns gather round the jovial, hearty auctioneer, and soon the tree which but a few short months ago waved in grace and beauty in the primeval forest, has become the prized possession of the cabinet-maker.

The purchase of mahogany is very much of a lottery, and no sooner has the manufacturer got his logs into his wood-yard than he is anxious to see if he has secured a bargain. The log from which our chest of drawers was made was found of excellent value, as part was suitable for cutting into veneers, and the rest was of good quality and colour.

The other wood used was pine or fir for the inside of the drawers. This was got from the shores of the Baltic; but instead of enlarging on this, let us look at the workman.

In general the cabinet-maker is a hardworking and intelligent tradesman. He passed six years as an appenticeship, and entertains a high opinion of the requirements of his craft. He requires to be neat-handed, and interested in his work. He has an excellent stimulus to activity and application, being paid not by the length of time he labours, but for each piece of furniture he produces.

When our chest of drawers was commenced to be made, the workman had handed to him a slip of paper giving a rough sketch of the article, with the sizes and mouldings marked on it. He then went to the cutting-out shed for the suitable woods, and this in workshops without machinery is the roughest and most exhausting part of the cabinet-maker's work. Next followed the smoothing or planing, shaping, dove-tailing, and, not least, the veneering. To an ordinary and uninstructed spectator, for some days little progress seemed to be made; but this was not so, for the disjointed pieces, when all prepared, were soon glued together, and they assumed the familiar and useful form of a chest of drawers, and required but a coating of polish and a hearty rubbing to fit them for their adventures in the world. It would be an interesting task, in fancy, to follow them to their future homes and uses; but this is beyond our province.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE annual meeting of the above Society was held on Friday, the 6th inst., at the Board-room, 7, Westminster-chambers. The report showed that the Society had been working successfully during the past session, and that the number of members was still increasing. Cordial votes of thanks were passed to the president, Mr. C. W. Whitaker, and the other officers; and the following members were elected office-bearers for Session 1873–74:—

President, Mr. C. H. Kew.
Vice-presidents, Messrs. G. W. Willcocks and W. F. Butler.
Members of Council, Messrs. E. H. Brewster, J. A. Coombs, J. J. A. Flower, C. Kingsford, W. Meakin, E. Perrett, C. J. Samuda.
Honorary Treasurer, Mr. W. C. Street.
Auditors, Messrs. H. Sandall and G. Cruickshank.
Honorary Accountant, Mr. J. Wagstaff Blundell.
Secretary, Mr. Edward Speed.

PROPOSED SANITARY AND EDUCATIONAL EXHIBITION.

IN connexion with the Social Science Congress, to be held at Norwich, from the 1st to the 8th of October next, there will be an Exhibition of Educational, Sanitary, and Domestic Appliances, based on the experiment which proved so successful at Leeds in 1871. The spacious Drill Hall has been placed at the service of the Association. The object of the exhibition is to bring under the notice of the public generally, and particularly those who are interested in social, sanitary, and educational questions, the latest scientific appliances for improving the public health and promoting education. Among these may be mentioned:—All matters relating to house construction, connected with which are building materials, light, warming, ventilation, and interior ornamentation; flues, fireplaces, stoves, boilers, furnaces, gas apparatus; cisterns, baths, piping, filters, fountains, lavatories, and all things connected with the supply and use of water; drain pipes, tubes, sinks, traps, troughs, closets, urinals, filters, and all plans, diagrams, sections, models, and specimens of sewage and drainage contrivances; in fact, all sorts of appliances, appertaining to the advancement of sanitary science, the promotion of education, and the improvement of the health and domestic comfort of the community at large.

FROM AUSTRALIA.

Melbourne.—One of the landmarks of the city of Melbourne in its early history has been removed by the pulling down of the Scots' Church, which stood for nearly thirty-two years on the site at the corner of Collins and Russell streets. In the beginning of 1869 the necessity for additional accommodation, suggested that a new church should be built. Steps were accordingly taken, which resulted in the design of Messrs. Reed & Barnes being accepted, and the subscription list already shows a sum of 12,000*l.* towards the necessary expenses. The *Australian Illustrated News* presents its readers with a fair engraving of the building, which is of good design, though the tower and spire are rather attenuated. The site is one of the finest in Melbourne. Being at the top of a hill, the building will form a striking feature in any distant view of the city. The style is Early English. The church is cruciform in plan. It consists of a nave, 42 ft. by 102 ft., and two narrow side aisles, 10 ft. 6 in. wide. The transepts are 30 ft. wide, and 18 ft. 6 in. deep. There is an apse formed at the north end of the nave, in which is placed the minister's platform. An organ-chamber is projected from the west transept, which is to be fitted up for the choir. The sittings are all contained within the nave, the side aisles being used only as passages. A tower, 22 ft. 6 in. by 22 ft. 6 in., and with a spire, 211 ft. high, stands at the salient angle. The church will seat 950 or 1,000 people, and will cost about 20,000*l.*——About the close of the year 1871, a number of gentlemen, having investigated the style of accommodation afforded in the cheap lodging-houses in Melbourne, resolved upon undertaking the erection of a model lodging-house for the poorer class of citizens. The Society for the Promotion of Morality cordially gave their support, and a sub-committee having been appointed to act, steps were taken to form a company, having a capital of 5,000*l.* in 400 shares of 12*l.* 10*s.* each, for the purpose of erecting and furnishing a house for men exclusively, having 200 beds, baths, reading-room, smoking-rooms, and other appurtenances. The whole of the shares have been taken up. The Government of the day granted a site for a building. It is intended that the scheme shall be self-supporting, the interest on the paid-up capital being limited to 10 per cent. The plans for the building, furnished by Messrs. Crouch & Wilson, were adopted.——The Eastern Arcade in Melbourne is approaching completion. Six months previously, the ground on which the arcade stands was a heap of ruins and *débris* from the Haymarket Theatre, which was destroyed by fire some twelve months before. At this time the services of Mr. George R. Johnson, architect, were called in, and he prepared the plans of this structure, which was commenced in July. The frontage to Bourke-street will comprise a hotel and shop on the ground floor, with extensive cellarage underneath, and a large hall, 83 ft. and 40 ft., on the first floor, suitable for drawing-room entertainments or public meetings. On the second floor will be the bedrooms, kitchen, &c., required for the hotel, and a photographic studio. The front is in Bourke-street. In the arcade proper will be, on the ground-floor, thirty-six shops, with cellars underneath, 22 ft. by 12 ft., and on the first floor or gallery level will be twenty-eight shops, 18 ft. by 12 ft., two of which are fitted up especially for florists, having glass roofs. The gallery will be 9 ft. wide, with light ornamental iron railing. This will form a promenade, and is so constructed as not to obscure the light to the shops on the ground-floor. All round the gallery are Doric columns and entablature, from which springs the large circular roof of the arcade. This is carried on laminated girders, steamed and bent, similar to what Mr. Johnson introduced in the Prince of Wales Opera House. There is a lantern light the whole length of the arcade, 14 ft. wide, the sides of which are filled in with glass louvres, giving both light and ventilation. The under side of the circular roof is panelled, and filled with five-pointed stars, glazed with stained glass. The gallery is approached by four wide staircases, leading from either corner of the arcade, where there will be also drinking-fountains for the accommodation of visitors. The frontage to Little Collins-street will comprise a hotel and restaurant, and an extensive photographic studio, constructed specially for Mayall & Sons. The restaurant is approachable from the gallery floor for the convenience of the tenants. The total cost of the building will be about

17,000*l*. The contractor is Mr. George Cornwell, who also built the Haymarket Theatre, which formerly occupied the site.

Kew.—The first stone of the Catholic College of St. Francis Xavier, Kew, was laid on the 8th of December. The site of the college is a short distance outside the village of Kew, off the road between that municipality and Hawthorn. It is in the midst of a beautiful park of 70 acres, purchased for 10,000*l*., on easy terms, from Mr. Patrick Mornane, of Melbourne. The architect is Mr. T. A. Kelly. The main block will be a parallelogram, and projecting central and side blocks will complete the design.

Fitzroy.—Building is spreading rapidly in the suburbs as well as in town. The National Bank of Australasia, which is being built at the corner of Smith and Webb streets, Fitzroy, was to be opened for business in a few days. It has a frontage of 46 ft. to Smith-street, and of 67 ft. to Webb-street, and from the footpath in Smith-street to the top of the parapet is 39 ft. The front of the main building to both streets is of the same stone as that used at the Melbourne Town-hall, and is of uniform colour. The style of architecture is that used in the palaces of Rome. The lower story has rusticated joints, with semicircular heads to the windows. The upper windows have also semicircular heads, with moulded architraves and cornices. The lower portion of the building is rock-faced bluestone ashlar, surmounted by a well-finished deep-fluted string of Malmesbury stone. The size of the public office is 34 ft. by 24 ft., and is 17 ft. high. The ceiling is divided by iron girders, covered by plastic mouldings, into three compartments. The floor in front of the counters and screens is to be of Minton's tiles. The strong room is large and lofty, and fireproof. For the customers of the bank 34 ft. by 12 ft. are allotted. Mr. R. Huckson is the builder, and Mr. L. Terry the architect.

Geelong.—When the gas-mains were laid in Geelong, some ten or twelve years since, a mile or two of paper pipes were put down as an experiment. On December 13th, when laying on a service-pipe for Mr. Gale's balloon, some of them were unearthed, and found to be in as good condition as when first laid down, while the iron pipes near the same place were nearly corroded through.

Ballarat.—The Town-hall at Ballarat bids fair to be more costly to the city than was thought would be the case. The *Courier* states that "Mr. Cowland, the contractor, claims 3,500*l*. for delay occasioned, as he alleges, during the progress of the contract. The city council has a claim for a very large amount,—some 1,500*l*.,—against Mr. Cowland for fines and penalties due on foot of said contract; and, on the suggestion of the mayor and the ex-mayor, the matter has been referred to arbitration,—Mr. Edwin James being the council's arbitrator, and Mr. R. Tunbridge arbitrator for Mr. Cowland."

Brunswick.—The Wesleyan denomination in Brunswick have just completed a new edifice, an engraving of which appears in the *Illustrated Australian News*. Mr. Percy Oakden, of Ballarat, was the architect. The church was formally opened on the 6th of February. It is only calculated to seat 800 persons, though attended by nearly 1,200 at each service. The building is of brick, on a stone foundation. Dark red bricks, of which the front is principally composed, harmonize with those of a lighter colour, arranged in patterns, used as quoins, or in the arches over the openings. Externally, the front is divided into three compartments, the centre one corresponding with the width of the main building, rising to the height of 53 ft., the gable being filled with a large window, pierced with four lights, with quatrefoil opening above. The northern division of the front is a porch, also gabled, with an open arcade of two arches. The southern division is occupied by a bell-tower, square at the base, and becoming octagonal in form as it rises. The upper portion is open, the roof being sustained by arches springing from iron columns. It rises to a height of 90 ft., and is finished with a wrought-iron finial. The interior of the church measures 72 ft. by 63 ft. The floor slopes for about two-thirds of the distance from the front towards the pulpit, the remainder being level, so that the seats, which are disposed in curves, with the pulpit as a centre, rise gently. The church internally is divided into nave and north and south aisles, the aisles being separated from the nave by arches of coloured bricks rising from iron columns with bronzed foliated capitals. These arches support the clearstory wall, which is pierced on either side with circular windows at a high elevation, thus providing for ample ventilation. The contractor was Mr. Robert Roberts, and the clerks of works, Messrs. Boase & Stanton. The total cost of the building is 5,000*l*., of which the congregation have raised 3,000*l*.

Adelaide.—In the illustrated paper already named there is an engraving of the central hall of the new Post-office, Adelaide. The two entrances to it, the one from King William-street and the other from Victoria-square, are arched with pilasters on either side, and have deeply-coffered ceilings. There are five steps of Mintaro slate, each in one length, leading from the pavement into a small lobby, and then access is gained by four steps into the public hall itself. This is 90 ft. long by 35 ft. wide, and runs the height of the two stories and a portion of the roof, being 65 ft. from floor to ceiling. It is paved with Minton's encaustic tiles in simple patterns, and lighted by a half-dome roof, the sides of which are formed of glass, framed in light iron-work. The principals are of large boiler-plate girders, and the ceiling is sunk and enriched with panels and centre-pieces containing ventilators. The room will be lighted at night by two ornamental lamp-pillars of four burners each. The balcony gives access to the whole of the upper story, there being fourteen french-polished cedar doors opening into it from the various offices and rooms. A basement, 8 ft. 6 in. in height, extends under the whole of the building, and is divided into storerooms, workrooms, lavatories, reading-rooms for the letter-carriers, and a residence for the keeper. Mr. R. S. Thomas is the architect for the building, and he estimates the total cost at 56,000*l*. The whole of the contract, including the fittings, has been carried out by Messrs. Brown & Thompson.

THE CONTRACTS FOR BOLTON TOWN HALL.

WE add to the particulars of the new Town Hall, Bolton, already given, the following list, from the *Bolton Weekly Journal*, showing the amount of each contract. It may serve as a guide, to some extent, in determining on similar undertakings:—

Contractors' Names.	Description of Contract.	Amount. £.	s.	d.
Ellis & Hinchliffe	Basement story	12,020	0	0
Haden & Sons	Warming and ventilating	752	16	0
Ellis & Hinchliffe	Masons, brick-setters, &c.	44,690	0	0
W. C. Marshall	Tympanum statuary	1,000	0	0
Ellis & Hinchliffe	Carpenters, joiners, &c.	12,975	0	0
W. Potts	Clock	580	0	0
Warner & Sons	Clock bells	1,060	0	0
Haden & Sons	Steam boiler, pipes, &c.	168	0	0
Haden & Sons	Hydraulic hoist and lift	118	0	0
Bolton Gas Co.	Piping for gasfittings	160	0	0
Minton, Hollins, & Co.	Tiling of Great Hall floor	2,000	0	0
Simpson & Son	Decorations	5,300	0	0
Ellis & Hinchliffe	Paving approaches	1,784	0	0
Hibbert & Co.	Lightning conductors	150	0	0
Ellis & Hinchliffe	Alteration, Large Room	45	0	0
Gray & Davison	Organ	2,220	0	0
Doveston, Bird, & Co.	Boro' Court, &c., fittings	1,130	0	0
Arrowsmith & Co.	Parquetrie, Great Hall, &c.	646	0	0
C. Smith & Sons	Door furniture & fittings	850	0	0
W. Wilson & Co.	Kitchen fixtures	296	0	0
J. & H. Pattesons	Chimney-pieces & grates	372	0	0
W. Wilson & Co.	Chimney-pieces & grates	228	7	6
W. Wilson & Co.	Kitchen ranges, &c	296	0	0
Broadbent	Safety clock - weights, 2*l*. 10s. per weight, and 16s. per cwt.			
Brown & Lamont	Blinds	153	14	11
George Smith & Co.	22 lamp-pillars	173	0	0
Macfarlane & Co.	2 ornament lamp-brackets			
Smith & Son	Master keys ..... each	5	5	0
Smith & Son	Brass rail, Gt. Hall, per ft.	0	5	6
Winfield	Hall lamp			
Messenger	Design for pendants			
Winfield	Design for bracket-lights			
D. Waddington	Chairs for Great Hall	867	0	0
D. Waddington	Furniture, Reception-room	271	16	0
Doveston, Bird, & Co.	Furniture, Magistrates' Room	336	5	0
James Lamb	Furniture, Dining-room	684	10	0
Arrowsmith & Co.	Furniture, Mayor Parlour	178	11	0
James Lamb	Design of Borough Court stove	56	15	0
James Lamb	Dining-room chairs	350	0	0
James Lamb	Chairs for Mayor, &c.	85	0	0
Winfield	Design of 3 pendants			
Messenger & Son	Pendant design			
James Lamb	Design for carpet			
James Lamb	Chimney-piece and fire-grate	275	10	0
Burstall & Taylor	Lion figures for portico	201	17	0
William Heyes	Painting	440	0	0
Gray & Davison	Hydraulic engines, &c.	1,099	18	6
Corporation Gas Department	Gas pendants for Gt. Hall			
	Temporary star-lights	348	0	0
Doveston, Bird, & Co.	Basement fixtures	1,241	6	0
Joseph Marsden	Ground-floor fittings	336	13	0
Joseph Marsden	First-floor fittings	242	8	10

LIGHT AND AIR, AND THE LONDON SCHOOL BOARD.

THE Vice-Chancellor, Sir R. Malins, at the suit of Mr. J. H. Clarke, against the London School Board, to restrain that body from building, so as not to interfere with his ancient lights to certain small tenements in Winchester-court, Pentonville, of which Mr. Clarke is lessee, has given a judgment.

The bill filed by Mr. Clarke against the School Board sets out that the Elementary Education Act, 1870, under which the School Board is constituted, incorporates the Lands Clauses Consolidation Act, 1845, and gives to the Board the power of taking lands compulsorily, with certain restrictions, viz., that the Board must obtain an order of the Education Department of the Privy Council authorising them to put their compulsory powers in force, and that no order so made should have any validity unless confirmed by Act of Parliament.

The Board had duly put in force their compulsory powers by taking a piece of land, about 53 yards square, north of Winchester-court, and were proceeding to build a schoolhouse upon it. Part of the schoolhouse-wall was within 4 ft. of the windows of some of the plaintiff's houses, and it was not disputed that the effect of this would be to block up and darken the plaintiff's light.

It was urged, however, on the part of the Board that they had already purchased the freehold interest in the plaintiff's houses, and that it was only the exorbitant price asked by Mr. Clarke which prevented their coming to terms with him. They were, however, taking the necessary steps to obtain powers to purchase his interest *compulsorily*, and meanwhile they maintained they were entitled to build upon the land, which they had acquired in the manner they were doing, and that they intended to pay Mr. Clarke, the plaintiff, a compensation to which alone he was entitled, and not an injunction.

In giving judgment, the Vice-Chancellor, Malins, said the case involved questions of very great importance. Everybody knew the important public purposes for which the School Board had been constituted. In order to carry out these purposes, compulsory powers had been given them, which, however, were to be exercised with certain restrictions. Now, it could not be contended that an adjoining owner, who was a private individual, would be entitled to build within 4 ft. of his neighbour's "ancient lights;" it was, however, maintained by the Board that they could do anything upon the land which they had duly acquired, short of touching the neighbour's soil, and that his remedy was only in compensation. If they could build within 4 ft. they could build within 4 in., and the proposition amounted to this, that, by exercising their right of blocking up a man's windows they could practically turn him out of his house, though they could not take it. To that proposition he, the Vice-Chancellor, could not agree. In Hutton *v.* South-Western Railway Company, and other cases which had been cited by the learned council in support of this contention, the damage complained of was sustained in consequence of an Act expressly made lawful by Parliamentary powers,—of the application to the Legislature, for which the public had notice,—and to the granting of which they might have objected, and the judges had proceeded on the rule of "convenience;" that as the defendants had the right to do the thing complained of, and as the damage could be better ascertained after it was done, the injunction should not be granted. But in this case he (the Vice-Chancellor) could not hold that a man practically turned out of his house must wait until the lengthy proceedings for the ascertainment of compensation under the 68th section of the Lands Clauses Consolidation Act, 1845, were worked out, and it could not be said that Parliament intended to take away rights in this manner. The School Board were to exercise their powers in a reasonable manner, and were to fix upon property where those powers could be exercised without doing injury to adjoining owners. It was important that public bodies should be kept within the strict exercise of their Parliamentary powers; and although the Board might ultimately acquire this land, and had already offered a reasonable sum for it, the plaintiff was entitled to insist upon his rights; and, considering that the School Board had taken an unreasonable view of their right of dealing with adjoining owners, he (the judge) was bound to give the plaintiff the protection he legally demanded.

Injunction granted, with costs, against the London School Board.

OWNERSHIP OF LAND.

A VERY suggestive question, in respect to the acquisition of lands and houses by churchwardens, overseers, and others in parochial trusts, is now under consideration of the Solicitor of the Treasury, Mr. Gray, Q.C., brought before that official by the Local Government Board and the Mile-end Town Board of Guardians, and the case is the following very extraordinary one.

In 1846-47, representatives of the several north-eastern parishes of London were delegated to provide a joint district asylum for vagrants, and to carry out that idea they got a loan from the Government Works Loan Commissioners and purchased a building in White Horse-lane, but which fell through, although Mile-end Old Town advanced money to carry out the scheme. The joint committee ceased to exist after a ten years' sitting, and at that time they had a balance in hand, but no portion of the money borrowed, or the interest upon it had then or since been paid.

A gentleman of the name of Kelday, one of the present churchwardens of Hackney, acted as secretary or clerk to the above committee, and has set up a claim to the property intended to be purchased, or purchased, for the vagrants' asylum, on the ground that he has held *undisputed possession* of it for more than twenty years. Some of the land, it appears, has been let by Mr. Kelday on lease, and new buildings have been erected on it.

The Mile-end parish now contend, and the Government, too, it seems, that it is a strange thing that an individual should be allowed to take possession of half an acre of land and use it as his own private property, in defiance not only of the parishes on whose behalf he was employed, but also of the Government authorities from whom the money was obtained to purchase it. They further contend that the mere fact of the legal documents relating to the land being left in the hands of the secretary to the committee do not confer upon Mr. Kelday any title to the land, and that his possession of it, or leasing it, is not legal.

In the meantime the building lessees of the ground are, as it may be supposed, in serious jeopardy and a fix.

AIR VAPOUR OR GAS FOR GENERATING STEAM.

Mr. R. WALKER has obtained letters patent for the invention of a new method of applying atmospheric gas, spirituous vapour or gas, and impregnated combustible vapour or gas as a heating medium for the generation of steam or other purposes. His mode of manufacturing the air vapour or gas is by means of pumps or other appliances, by which the air or atmosphere is forced through a perforated or inlet pipe placed in a receiver, which is partially charged or filled with naphtha, petroleum, methylated spirit, or oil, which are to be heated or otherwise, as may be requisite for increasing or lessening the strength and volume of the vapour or gas. In this receiver is placed a certain plate or plates, in a position relative to the perforated or inlet pipe, and to the level of the liquid. The air, after impregnation as before stated, passes from the receiver into one or more expanding and contracting vessels or regulators, which are made of vulcanised india-rubber, or any other such elastic substance. By the contraction of these regulators or vessels it is forced into the pipes, and thence regularly through the burners for ignition. The claim includes the combination of "air-forcing," "air-impregnating," "impregnated-air delivering," and "impregnated-air consuming (or utilising)," contrivances or apparatus set forth, including particularly the use and application of the invention to the furnaces or boilers of marine, locomotive, and stationary engines.

NEW METHOD FOR THE UTILISATION OF SEWAGE.

A MEETING has been held of gentlemen interested in the promotion of a company in Ireland for the purpose of carrying into effect Dr. Anderson's process of defœcation of sewage, as practised by the General Sewage and Manure Company, Limited, at Nuneaton, Warwickshire and other places in England. Lord Talbot de Malahide occupied the chair.

The Chairman stated that the question of the utilisation of sewage was not new to him. He had given much attention to it, and had felt confident from the first that the resources of science would lead to some method of deriving valuable products from sewage. Heretofore a vast number of schemes had been started for the purpose, almost all of which had proved failures.

Dr. Cameron said that he might state, both for Dr. Reynolds and himself, that when they were first called on to investigate the process in question they were prejudiced against it. They had very gloomy forebodings, and thought that they should have to report adversely. However, after they had made their investigations, they arrived at the conclusion which they had already reported to the directors of the company, that the process afforded every probability of a commercial success. The quantity of sewage produced in a city like Dublin, with a population of a quarter of a million, was enormous. By means of the process in question this sewage could be made to yield an immense quantity of manure. He had calculated the actual money-value of the sewage of Dublin at 100,000*l.* There was reason to believe that Parliament would sanction a scheme for the purpose of applying sewage as a manure to the soil on a large scale, and, that being so, they were bound to render it as innocuous as possible. He believed that the present process afforded every probability of success in the way of rendering sewage innocuous. The cost of producing the manure would be about 10s. a ton. This would be sold by retail vendors at from 1*l.* to 1*l.* 5s. per ton, and its money-value to farmers would be about 1*l.* 10s. a ton.

Dr. Reynolds said the process consisted in applying to the sewage clay treated with oil of vitriol, and mixed with a little water, in the proportion of 6½ cwt. of the vitriolised clay to every 100,000 gallons of the sewage. To that mixture 1¼ cwt. of slaked lime is added. After a few hours a precipitation forms at the bottom of the receptacle containing the sewage, leaving a clear liquid at the top. The precipitation is the manure, and both it and the liquid are perfectly devoid of odour, and inoffensve. The fluid may be used for irrigating land, or allowed to escape into the sea. Dr. Reynolds gave an experimental illustration of his statement, by applying to a vessel filled with fluid sewage, taken from one of the sewers of the Liffey, a proportion of the prepared clay. The clarifying of the fluid and formation of the precipitate at the bottom became visible while the proceedings were going on, though not complete at their termination.

The chairman asked Dr. Cameron to give an account of what he had seen on the occasion of his visit with Dr. Reynolds to the General Sewage and Manure Company's works at Nuneaton.

Dr. Cameron said, that the only difference between what they saw there and what had been now shown experimentally by Dr. Reynolds was, that at Nuneaton the process was carried on with reservoirs, &c., on a large scale. The fluid there was used for the irrigation of fields. It was proposed that when it was not required for that purpose it should be discharged into a river or the sea.

Mr. Alma, one of the Blackrock Commissioners, stated that the Board of which he was a member had sent Mr. BAINES, C.E., to report upon the works at Nuneaton. Mr. Barnes was present, and would be happy to afford his testimony on the subject.

Mr. Barnes gave a most favourable account of the efficacy of the process in producing results altogether innocuous in a sanitary point of view. The water produced after the deposit of the precipitate was perfectly pure. The mechanical arrangements at Nuneaton were not as perfect as he thought they might be, but that was a matter of detail. The sewage produced at that place was anything but favourable as a test of the process. He was perfectly satisfied that the process was one capable of being successfully applied. In reply to a question, Mr. Barnes said that if fluid, such as was the residuum after the deposit of the precipitate formed by the process, were discharged into the sea, he did not think it would be in the least degree injurious to the bathing.

The Chairman said they were deeply indebted to Dr. Cameron and Dr. Reynolds for their valuable lectures, and he was sure he was only acting in accordance with the wishes of the meeting in offering them their very best thanks.

"POWER OF SURVEYOR'S CERTIFICATE."

SIR,—I would respectfully suggest that the writers of the letter published in your issue of the 7th inst. under the above heading consult their legal advisers, instead of trying to get "cheap advice" through your valuable columns.

AN OLD SUBSCRIBER.

UNVEILING THE NEW REREDOS IN GLOUCESTER CATHEDRAL.

THE ceremony of unveiling the new reredos presented to Gloucester Cathedral by the Freemasons of the province, at a cost of 1,000 guineas, took place on Thursday in last week. We have already (Feb. 22nd, p. 146), given a view and description of the reredos; but we may repeat, that it was designed by Sir Gilbert Scott, the cathedral architect; is 17 ft. 5 in. in width; and contains seven niches, filled alternately with statues and sculptured groups, the subjects being—"Moses bearing the Tablets of the Law;" "The Nativity;" "St. Peter;" "The Ascension;" "St. Paul;" "The Entombment of the Saviour;" "David bearing the Harp." The central group, "The Ascension," is 5 ft. in height, and the side groups are about 4 ft. 3 in. high. Over the figures and groups are finely-wrought canopies; above these are three open pinnacles, with statues and angels, and surmounting the central pinnacles is a cross 27 ft. from the floor. The groups and statues were by Mr. J. H. Redfern, sculptor. The other portions of the work were executed by Messrs. Farmer & Brindley.

The Rev. C. Raikes Davy, P.C., the Freemasonic Grand Chaplain of England, preached the sermon. His text was from Psalm xc. 17, "Let the beauty of the Lord our God be upon us; and establish Thou the work of our hands upon us; yea, the work of our hands, establish thou it." The Rev. gentleman excited the curiosity of the ladies by propounding for his own reply the question, "What is Freemasonry?' But he went on to say,—Our ceremonies are only the keys to our treasure. From the lessons which they inculcate the well-informed Mason derives instruction. The teachings of our lodges, like the Adyta of the ancient temples, are hidden from the eyes of the uninitiated. But as to the possession of a secret unknown to the rest of the world, we profess nothing of the kind. It is true that all our affairs and transactions are conducted in secret, but we do not on that account pretend to be better or wiser than our fellow-creatures. Let us look at the present state of society in general. The diffusion of knowledge is a remarkable feature of the times. Literature, taste, and art, and philosophy and science, may elevate and enrich the intellect. They may wield an almost magic sway over the minds of men; but they will not sanctify the heart, nor change the natural disposition. So far these attainments are no foundation on which to build for eternity. "Other foundation can no man lay than that is laid, which is Jesus Christ." From the building of Solomon's Temple, its wondrous architecture and its magnificent structure, we are led to the foundation-stone of the Spiritual Temple—Jesus Christ himself,—that bright and morning star, whose rising brought health and salvation to mankind, and light to those that sat in darkness and in the shadow of death. Yes, Christ is set before us as the foundation-stone, the corner-stone, the topstone, of our Masonic structure. We are taught to look to Jesus as the captain of our salvation; to look to Him as our incarnate God and Saviour; to look to Him as Christ our Prophet, Christ our Priest, and Christ our King. Such are Freemasonry, its principles, and its teaching. The heart of the true Christian is the abode in which God delights to dwell. To turn human souls to become this dwelling-place is one principal use of the Church material. By the Word preached within its walls is unfolded and displayed the great story of the Cross on which the Prince of Glory died. By it is infused into the minds of the people the love of Christ. They are made to know the power of his death and resurrection. This is the work of human preaching with the power of the Holy Ghost sent down from heaven. Let us rejoice heartily that this material house,—this palace of the Lord God,—has been thus so greatly beautified. Let us pray God to make it a spiritual house,—a house of living stones, that the inner palace may also grow up under the teaching of the Holy Ghost the Comforter. Let us remember how it is that the stone is shaped before it is fitted for the builder's use,—

> "Every stone by blows is squared,
> By the hammer rude prepared."

May we be built up in the walls of the heavenly Jerusalem, and there abide for ever. "Let the beauty of the Lord our God be upon us; and establish Thou the work of our hands upon us; yea, the work of our hands, establish Thou it."

Some of the Masonic brethren, deep in the lore of the craft, ventured upon a criticism, implying that the sentiments of the preacher were drawn from the Templar degree, rather than from the broad ground of pure Masonry; but the general public know nothing of the distinction.

CARCASSES, NON-PRODUCTIVE BUILDINGS, AND PAROCHIAL BUILDERS.

THE suburban boundaries of London, that have been much overbuilt,—*i.e.*, the parishes of Kensington, Fulham, Battersea, &c.,—for several years past have been under much difficulty in regard to the assessment and collection of rates imposed upon new buildings, for new roads, pavement, and other parochial burdens; and it is well known that very large buildings, unlet, in the rich parish of Kensington, have had legal sequestrations affixed to their doors for non-payment of rates. In some parts, at Notting-hill, street after street of new houses belonged to the parish, if the builders or mortgagees did not answer to the summons affixed to the unfinished or unoccupied premises. The roads, however, being actually impassable for foot, horse, or carriage traffic,—yet "dedicated" to the "parish,"—and the "parish" crushed the little builders by demands for roads never made, and, what was worse, for roads made impassable to reach the new streets.

The parish of Fulham has been "wise in time," and last week a shrewd committee of the vestry saw the short-sightedness of their neighbour, Kensington, and, on surveying the large extent of non-productive property, have recommended "that rates should not be charged upon unfinished houses, commonly known by the name of carcasses." The vestry adopted this report, and the builders have at once set to work to finish some hundreds of houses, unroofed.

Battersea parish has no less than 3,000 empty houses, and tenants are afraid to take eight-roomed houses at the low rent of 20*l.* a year, for fear of back rates and the toll of the Government bridge at Chelsea.

Pimlico, Westminster, and Chelsea are overcrowded, and cannot, for the above causes, supply tenants.

ACCIDENTS.

Gas Explosion in Manchester.—At the Pleasant Inn beer-house, York-street, Cheetham, Manchester, an escape of gas being suspected, the landlord incautiously took a light to the gaselier in the front room. He had no sooner done so than the gas instantly ignited at the bottom, and running up the pipe, a volume of flame filled the room, and a terrible explosion took place. The front part of the building was entirely shattered, the windows and walls being thrown into the street a distance of several yards. Mr. Melville turned off the gas at the meter while his clothes were in flames. His wife and he were much burnt. The damage is estimated at between 300*l.* and 400*l.*, covered by insurance in the Sun office.

Fatal Fall of a Wall at Manchester.—Two bricklayers were employed in pulling down a wall at Butterworth's Mill, Manchester, where a large fire had occurred a day or two previously. One was on a ladder, a second was undermining the wall, and a third was watching, ready to give an alarm; but before he could do so the wall fell, and the two men who were working on it were killed.

Destruction of a Mansion by Fire.—Alderdale Lodge, the residence of Mr. Buckley, M.P. for Stalybridge, and situate about three miles from

Ashton-under-Lyne, has been destroyed by fire. The gardener had taken a light into the cellar to discover a leakage of gas, and an explosion ensued, blowing out most of the windows to the building, and setting fire to the house. The fire brigade, who were quickly on the spot, could do no more than save the offices. The damage will amount to several thousand pounds.

Fatal Fall from the Top of a Monument.—In the neighbourhood of Cupar Fife, Miss Laird, daughter of the Rev. John Laird, minister of the Free Church in that town, went along with a brother and a cousin to a monument, 100 ft. high, erected to the memory of the late Earl of Hopetown, on the top of a hill. The column is pierced by a spiral staircase, and surmounted by a cupola, about 15 ft. in height. The footing at this elevation consists of a square stone slab, and is protected by a stone parapet only 3 ft. high, which parapet, being circularly built, leaves the four corners of the rectangular slab jutting outwards for several feet beyond the circular column. Having noticed some acquaintances coming up in the direction of the tower, the attention of the party was for a moment diverted from each other, and on Miss Laird's brother turning round he was horrified on seeing his sister standing on the outside of the parapet, on one of the corners of the slab referred to. He cried to her to come back, but the poor girl seemed suddenly to become giddy, and made a clutch at the edge of the parapet. She missed her holding, and fell over and down to the ground below. The poor young lady never recovered consciousness, and died without uttering a syllable. To leave it possible even for carelessness to meet with such a fate seems culpable.

Accident in the Vienna Exhibition.—A portion of the staircase to the balcony of the Russian Pavilion has fallen in, injuring four persons, including two Austrian officers.

COMPETITIONS.

Mountain Chapels.—The sub-committee appointed by the Carlisle Diocesan Church Extension Society to adjudge the premiums under the above scheme, have awarded the first (twenty guineas) to the designs of Messrs. Paley & Austin, of Lancaster, bearing the motto "In montibus," and the second (fifteen guineas) to those of Mr. C. J. Ferguson, of Carlisle, bearing the motto "Delta."

Leicester. — The design of Mr. Tait, of Leicester, has been selected in a limited competition for a new Nonconformist church, to be erected at Belgrave, the northern suburb of this town.

Wesleyan Chapel and Schools, Peterborough.—In a limited competition for the above building, the plans submitted by Mr. John Johnson, London, have been selected. The proposed chapel will accommodate upwards of 1,000 adults, and the schools 550 children. The cost of the works will be about 4,500*l.* The style of the building is Italian.

St. Petersburg.—The competition for bridge designs (Neva Bridge), at St. Petersburg, is decided. The commission have awarded the first premium, 6,000 roubles, to "Westminster" (supposed to be Mr. Page: arched design); second premium, 3,000 roubles, to R. M. Ordish "Max Am Ende"; third premium, 1,500 roubles, to "B. S." (a Russian). Eighteen designs were sent in.

A WATER-TIGHT CELLAR-FLAP.

IN reply to "Inquirer,"—his object may be accomplished thus:—Let the section of the curb be 6 in. high by 4 in. wide. Let it have a rebate *inside underneath*, say 1 in. high by 2 in. wide. Let the curb, when made, be properly bedded on good brickwork with Portland cement, and so that the under-rebate shall be made good with the cement. To effect this, screed may have to be used. When this shall be done, no water will be able to pass under the curb into the basement.

The top of the curb will have to be rebated for the flap 2¼ in. deep by 1¼ in. wide. Let the inner angle of the rebate have a ½-in. water-channel all round, ½ in. deep, with plenty of ¾-in. holes to convey the water from the channel to the outside of the curb. Let the top of the curb be weathered ¼ in. and its lower outer edge be ½ in. or perhaps ¼ in. above the ground level; then the water cannot re-enter the rebate, but will run away through a small drain-pipe laid all round the curb below the level of the ½-in. water-channel, and having an outlet discharge-pipe laid with a proper fall. The bottom of the rebate to receive the flap will then have a ¾-in. fillet, weathered towards the water-channel, on which the flap will rest.

The flap would be best made of 1¼-in. boarding properly prepared, ploughed, and tongued, and in two thicknesses, crossing each other at right angles, and screwed together from the underside with stout 2-in. screws, and the under-side of the flap when cleaned off should be covered with galvanised iron turned up round the edges of the flap, which should be rebated 1½ in. by ½ in. to receive it, and the iron turned into a groove in the edge of the flap, and also properly nailed all round the edges.

If made by a competent workman the result will be successful. HENRY AMBROSE.

MONUMENTAL.

A MEMORIAL of Sir Joseph Paxton has been unveiled on the terrace at the Crystal Palace. The memorial, which has been erected by private subscription, consists of a colossal marble bust, 8 ft. high and 4 ft. 6 in. at the base, carved in Carrara marble by Mr. W. F. Woodington. The pedestal is 11 ft. square at the base, and 31 ft. high, making the total height 39 ft. from the ground. The lower part of the pedestal is in Portland stone; the upper part in Portland cement, in imitation of red porphyry. In the base four incised slabs of Cornish serpentine will be inserted, the first containing a diagram of the principle on which the building of the Crystal Palace is constructed, and the other the following inscriptions:—"Joseph Paxton, born at Milton-Bryant, Beds, 3rd August, 1803; died at Rockhills, Sydenham, 8th June, 1865." "The Crystal Palace was opened by Her Majesty Queen Victoria on June 10th, 1854." And "Si monumentum quæris circumspice." The whole monument is designed by and erected under the care of Mr. Owen Jones. The carving on the base is by Mr. Smith; the masonry and cement work are by Mr. Charles Bool and Mr. Enoch Bool.

BUENOS AYRES.

IMPROVEMENTS are being made in the suburbs of this city. Flores has a new theatre now in progress, and the proposed waterworks will, we hear, be shortly carried out. Notwithstanding the high price of materials in England, tramways, gas, waterworks, and telegraph works are still going on, the name of Mr. George Bower, the contractor, being connected with most of them.——The Mutual Gas Company is making progress, and the works are expected to be the finest in South America. This company holds a valuable contract with the municipality for ten years, for 4,200 lamps, at about 10*l.* 15*s.* per lamp per year. The city is still making rapid extensions. For the new extension of the Rio Cuarto Railway, there are thirteen proposals. The contract is likely to fall into the hands of Mr. Thomas Thomas and his associates.——A Frenchman has lately imported wooden houses of about four rooms each, and erected them on the Flores-road. The cost, with duty, comes to 400*l.*, but like a similar speculation of iron houses by an Englishman, they have proved a failure and a loss.

THE COTTON WINDOW, GUILDHALL.

THE stained-glass window presented by Mr. Alderman Cotton to the Corporation of the City of London, and erected in Guildhall, has been formally unveiled, before the City Lands Committee. The alderman's active and well-known connexion with the Lancashire Cotton Fund first suggested the subject of the window, which has been executed by Lancashire artists and workmen, and supplied by Mr. William Ramsey.

The story is that of the Cotton Plant. The different stages from its growth to its final application to clothing are illustrated by twelve medallion pictures, showing, 1st, Sowing; 2nd, Growing; 3rd, Picking; 4th, Packing in the Field; 5th, Loading at New Orleans; 6th, at Sea, in American Clipper; 7th, Discharging in the London Docks; 8th, Carting through St. Mary-axe; 9th, in Transit on the Rail; 10th, Manchester, Piccadilly, the Cottonopolis; 11th, Manufacture in Cotton-mill; 12th, Wearing, being Family Group. The colour of the ground-work is lavender; the borders are ruby, with an amber ribbon, in colours, ruby, amber, and lavender; the Gothic scroll-work being brownish-white.

ARCHITECT TO THE CHILIAN GOVERNMENT.

SIR,—Whoever the successful candidate may be, I feel sure he will not object to giving "the profession" a few particulars of his experience in Chili, through the medium of your columns.

The construction of buildings, in countries subject to volcanic eruptions, has occupied my attention for several years, and if I mistake not it is an ordeal that many of the "successful candidate's" buildings may have to go through. I hope, therefore, that we may have the pleasure of reading a little of his experience in due time, and I am sure the profession at large will feel greatly interested. H. T. P.,

One of the Ninety-five Unsuccessful Candidates.

CONTRACTS.

WANT *v.* STALLIBRASS.

ACCORDING to the *Law Journal*, this was an action to recover 300*l.* deposit paid on a contract for the purchase of an estate sold by auction subject to conditions, among others—1. That the vendor should deliver an abstract of his title in seven days, all requisitions not delivered within fourteen days after delivery of the abstract to be considered as waived; and 2. That if the purchaser made default in the conditions, his deposit should be forfeited. An abstract was delivered, showing that the property had been devised to trustees (of whom the defendant was the survivor), upon trust to pay the income to Frederick Stallibrass for life; and after his death to sell, and divide the proceeds among his children. The abstract also showed that Frederick Stallibrass was still alive. The purchaser made no requisition within the fourteen days. At the trial of the action the verdict was entered for the plaintiff. A rule having been obtained to set aside this verdict,

The Court held that the condition as to waiver of requisitions and to forfeiture applied to the case of a defective title, the defects in which could be supplied on requisition, but had no reference to such a case as this, where there was really no title at all in the vendor; and they discharged the rule accordingly.

CHURCH-BUILDING NEWS.

Liverpool.—The church of St. James-the-Less, in Stanley-road, has been consecrated. The building was erected some ten or twelve years ago, and consisted of a south aisle 70 ft. long by 20 ft. wide, and a chancel 20 ft. square. For some time this has been found to be inconveniently small, and the accommodation has been increased from about 250 to 750 kneelings by the enlargement of the edifice according to the original design. This has been done by the erection of a nave 30 ft. wide, and chancel 35 ft. long by 24 ft. wide, organ-chamber and vestries, and small west gallery. The whole area of the church is paved with red and black tiles, and seated with rush-bottom chairs, except a portion of the south aisle, which still contains some of the old open benches. The roof to the nave and chancel is continuous and unbroken, except by the lesser width of the chancel. There is no chancel arch or jamb to obstruct the view, but the junction will be marked by means of a rood-screen of carved oak, in seven compartments or arched openings, filled in with open tracery. The lower part of this screen is already fixed, and the centre opening protected by wrought iron gates. The chancel is divided into three bays, the first two having an arcade of moulded brick on each side, resting on polished red granite pillars, and filled in with screens of open tracery work. The third, or eastern bay, forming the sacrarium within the altar-rail, having three sediliæ and piscinæ on the Epistle side. The sediliæ are constructed in the thickness of the wall, of Caen stone, with red marble shafts and carved caps and bosses. The chancel is raised three steps above the nave, and the altar is set upon a dais of three steps, with one more at the altar-rail. The chancel is furnished with stalls returned against the wood screen, with subsellæ for the choir. The eastern wall of the chancel affords a groundwork for a reredos. Instead of there being a single large window there are two two-light windows with pier between, and a pentagonal circular window in the apex. The bosses to the chancel arcade are carved with emblems of the Passion, and upon the caps of the two principal granite pillars are carved representations of the

Entombment and the Resurrection. Much of the carved work is at present only in block concealed for the occasion under a profusion of natural foliage and flowers arranged and applied. The arcade of the nave is of moulded red and black brick of two orders, resting on red stone pillars. The inner arches to all the windows and other openings are of red pressed brick, as well as the lower part of the walls and the bands at wall heads and spring of windows. The nave will be lighted by means of wrought iron coronæ, suspended from the points of the hammer-beams, and the chancel by three floriated brackets on each side. The only portion of the exterior which comes into view is the east end of the chancel, with a niche in the centre pier for the reception of a figure of St. James-the-Less. The work has been executed by Mr. Burroughes, from the designs, and under the supervision, of Messrs. W. & J. Hay, of Liverpool, architects.

Lightcliffe.—Contracts for the new church have recently been let as follow:—Masons, Messrs. Luke & Wm. Crowther, of Rastrick; carpenter and joiner, Mr. J. Christy, of Huddersfield; plumber and glazier, Mr. R. P. Stafford, of Halifax; slaters and plasterers, Messrs. A. Bancroft & Son, of Halifax. Mr. C. Mawer's tender for carving was accepted. The church which was designed by Mr. W. S. Barber, of Halifax, will be in the Perpendicular style. The ground plan gives nave, aisles, chancel, with side-aisles and organ-chapel, and sacristies on the north, baptistery opening from the second bay on the south; and north-west tower. The nave, in five bays, is to be 71 ft. 3 in. long, and 23 ft. 9 in. wide; width of aisles, 9 ft. 9 in.; and depth of chancel, 32 ft. 6 in. The tower, which is 12 ft. square, rises to a height of 74 ft., and has an octagonal turret at its north-west corner. It is in four stages, the first having a two-light window facing west, and the entrance-door (which has a carved niche over it) on the north face. The belfry stage has coupled two-light windows on each face. It is to hold a peal of eight bells. The great west window is a four-light one, with tracery. The windows to the aisles are three-light and two-light ones. On the south side the baptistery is 12 ft. by 8 ft., and is lighted by two-light windows. The east window is in five lights, with head tracery. All the floors will be laid in encaustic tile-work. The roofs are open-timbered, that to the chancel having a carved cornice. The shafts to the nave arches are octagonal, with flowers carved on the capitals. Nothing has yet been done as to the introduction of stained glass. The foundations of the church are in course of being laid, and ere long the work of its erection will be pushed forward. The cost of the building itself is borne by Major Foster, of Cliffe Hill.

Poulton.—The foundation stone of a new parish church has been laid in the village of Poulton, on the high road from Cirencester to London. Mr. W. Butterfield, of London, is the architect, and the contract has been taken by Mr. Restall, of Bisley, the builder of the schools. The church, which will be dedicated to St. Michael and all Angels, will, we understand, be a very plain structure, and will not cost more than 2,000*l.*, of which amount about 1,400*l.* have been already subscribed.

Madingley.—The restoration of the church has been proceeded with so far as the funds at present available will permit. The works already executed include new open-timber roofs to the nave and aisle, facing with stone the clearstory wall on north side; rebuilding a portion of aisle, and adding battlements to same; also restoring a considerable portion of the stonework generally. The works have been carried out by Mr. John Morley, of Cambridge, architect, the contractors being Messrs. Joseph Worboys, of Comberton, and Tomson, of Cambridge. The plumber's work was executed by Messrs. Favell, Ellis, & Sons, of Cambridge. The chancel will probably also be in course of restoration in a short time.

Wysall.—The ancient church here has recently undergone considerable repair, and has been re-opened for Divine worship. The church had been allowed to fall into a dilapidated condition, so much so that it was considered unsafe to enter it. The south wall had become 1 ft. or more out of plumb, and would probably have come down at no very distant date had not proceedings been taken to prevent this. The work was done by Mr. G. Hitchcock, builder, of Hazlewood. Some few alterations have been made in the interior of the church. The old pews have been removed, and chairs substituted, and additional accommodation has been obtained by adding the old schoolroom near the belfry. A new pulpit has also been obtained, together with a communion-table, lectern, and harmonium. The old porch, which formerly went down with two steps, has been much improved, and the floor of the church has been reflagged. The whole of the sittings are now free, and accommodation is provided for about 200 people.

Shrewsbury.—It is proposed to build a new chancel to St. Michael's Church, in this town. At present there is only a shallow apse, and there are not enough seats for the choir, and the whole of the east end of the church is inconveniently dark. The estimated cost of the new chancel, together with the warming of the whole church, is about 500*l.*, of which nearly 400*l.* are already promised.

Lawford (near Rugby).—St. Peter's church has been entirely rebuilt from designs by the late Mr. William Slater, and by Mr. R. Herbert Carpenter. With the exception of the Norman doorway, the north arcade, and two curious lancets in the chancel, there was nothing of interest in the old church, excepting the timbers of the nave and chancel roof, which have been repaired and re-used. The church has a nave of five bays, with north and south aisles, a long chancel, with organ-chamber and vestry, on the south side. It seats 300 persons. The walls are built in coursed Attleborough stone, with Attleborough stone dressings. The tower stands at the west end, and is of entirely new design, the former one being but late and poor in character; the parapet and turret are of the usual embattled Warwickshire type. The contractors were Messrs. Law, of Lutterworth, under Mr. Thompson, as clerk of works; the carving has been executed by Mr. Harry Hems.

Dorking.—The foundation-stone of the tower of the new parish church of St. Martin has been laid by the bishop of the diocese. This tower is now being restored by Messrs. Goddard, of Farnham. The hon. sec. of the present building committee was also secretary to the restoration committee in 1835, when the late parish church was built, and the two churchwardens under whom the present work of rebuilding is being carried out filled the same office (though at different periods) while the chancel was being restored in the years 1866–68. The rebuilding of Dorking parish church was commenced on the 1st of August, 1872, the cost being defrayed by public subscription. Mr. Henry Woodyer is the architect, and Mr. William Davidson the clerk of works.

Hyde.—The foundation stone of Holy Trinity Church, Gee-cross, Hyde, has been laid. The church, which will cost about 1,800*l.*, is estimated to seat comfortably 300 persons. About 1,100*l.* have already been subscribed. It will be built of stone, with mullioned and traceried windows, and will be, of course, provided with a chancel, nave, transept, organ-chamber, vestry, &c. A belfry with spirelet is to be situated in the angle between the chancel and transept. The style of the building will be the Decorated Gothic. The site was given some years since by Mr. T. W. Tatton, of Wythenshawe, and is almost on the top of the slope going up to Werneth Low. The architect is Mr. Medland Taylor, Manchester.

Grindale, Bridlington.—The foundation-stone of a new church has been laid here by the Rev. Y. Lloyd Greame, of Sewerby House, patron of the living, who provides the whole of the money, 2,000*l.*, which the building will cost. The church is to be erected on the site of what was really a modern church, having been built so recently as 1830. The new building will be in the First Pointed style of architecture, and will consist of nave, chancel, vestry, porch, and bell-gable for two bells. It will be built of Whitby stone, and will seat about 150 persons. The building is being erected from the designs of Messrs. Smith & Brodrick, of Hull and Bridlington Quay, by Mr. John Renard, of Bridlington Quay.

Ashbourn.—At a meeting of the inhabitants it has been unanimously resolved that the spire and parapet of the tower of Ashbourn Church be repaired, and that a committee be appointed to collect subscriptions for the purpose, and communicate with Mr. Frith, of Coventry, who has recently repaired the tower and steeple of Stratford-on-Avon Church, and has examined the spire of Ashbourn Church, and sent in an estimate of the probable cost; and to submit Mr. Frith's report to the opinion of some other person competent to judge of the matter; and obtain such further information as they may think necessary, and report thereon to a future meeting. A committee has been appointed. It is estimated that the cost of the repairs will be from 400*l.* to 500*l.*, and this will include only such repairs as are necessary for the safety of the church and spire. A list of subscribers was opened in the room, when several liberal sums were promised.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Wednesbury.—The foundation stone of a new church for Wednesbury has been laid. The building will occupy a site adjoining the parish church, on Church-hill, a portion of the old Roman Catholic church having been pulled down to make room for the new building, which will be in the Early English style of architecture, faced with red brick. The windows will be relieved with box-grained stone, and the columns of the arches and outside the nave and chancel will be of Painswick stone. The roof will be open groined. The building, when completed, will accommodate 1700 persons, being sitting-room for nearly 500 more than the old one. There will be no pews, and the fittings will be very plain. Mr. Gilbert R. Blunt, of London, is the architect; Messrs. Barnsley & Sons, Birmingham, are the builders; and Mr. Carew is the clerk of the works. Until the new church is erected, the service will be conducted in the portion of the church that has not been pulled down. The Rev. Mr. Bathurst, the pastor, we believe, provides the greater portion of the cost of the edifice, which will amount to 5,000*l.*

Harrogate.—A new church has been opened here for divine service. The edifice is dedicated to St. Robert. The new church adjoins St. Robert's Presbytery and Schoolroom. It is built of brick, with an admixture of stone. The style observed is that which prevailed in the thirteenth century. The principal front is in St. Robert's-street. The doorway is deeply recessed, with a circular window in the pediment displaying an ornamental cross, and this is surmounted by a group of four lancets, with shafts of red Rainton stone. From amidst these, from a sculptured corbel, rises an enhanced shaft, terminating some feet below the apex of a gable in a bracket to support a statue, which in its turn is surmounted by a canopy lifted considerably above the roof. The semi-octagonal baptistery projects on the one side, and the bell-turret, containing the stairs to the organ-loft, on the other. By this means additional breadth is given to the façade. The church consists of a wide nave, flanked by aisles, and a chancel of the same height and width as the nave. The columns of the nave are of light red sandstone, and carry arches, finished in brick. Above these and connecting the corbels of the roof, runs a continuous string-course of brick and stone, and a clearstory of unadorned lancets, placed two in each bay, which light the entire structure. In the treatment of the altar end, under deeply-recessed arches, resting on pilasters with carved capitals, are two windows, each of two lights, the heads pierced with quatrefoils, while above and between them is a circular window of rich design, all three being symmetrically united under a trefoil-headed arch. The capital of the central pilaster supports a cross of large dimensions, its arms extended in front of the rose-window, which thus encircles the conspicuous figure of Christ crucified. The plain corbels of the nave give place in the chancel to others of ornamental design, from which spring shafts of Rainton stone to meet the principals of the roof, which throughout are arched and coupled with tie-beams. The aisles are lighted with lancets similar to those in the clearstory. Each aisle is terminated with side-chapels, which are entered under lofty arches, and are half octagon in plan. The three stone altars were presented to the church. The architect is Mr. George Goldie, of London, who was also architect of the Church of St. Wilfrid. The estimated cost, exclusive of the altars and internal fittings, was 3,500*l.*; but the total cost will be much more. The church will seat 600. Mr. John Wood, of Leeds, builder, was the contractor for the whole. The high altar was the gift of Miss E. Baillie, of Leeds. It is executed in Caen stone, carved, with polished granite shafts, and slabs of Devonshire marble. In the centre of the reredos rises a canopy, surmounting the tabernacle, which is of metal, enamelled and set with precious stones. The extremities of the reredos are ornamented with statues of angels carrying groups of candles. The whole rises to the height of about 20 ft. Rising above the lofty canopy of the tabernacle is the representation of the Crucifixion. The design is in the meantime marred by the powerful light from the

adjacent white windows, and especially the rose-window behind it,—a defect which the heads of the church hope may be remedied by some generous benefactor filling the windows with stained glass. The altar on the right of the high altar is dedicated to St. Joseph, a statue of which saint, sculptured in wood, and executed at Munich, fills the niche in the centre. Sculptured Caen stone and marbles complete the design. This altar is the gift of Mrs. Jackson, late of Leeds. The altar on the left of the high altar is dedicated to "Our Lord of the Sacred Heart," and is somewhat similarly treated in Caen stone, with inlays of English alabaster and Devonshire marbles, and a statue (in colours) of our Lord in the upper portion. A small carved tabernacle of alabaster fills the centre of the altar. This altar is the gift of Mr. Swales, of Rud Farlington. The floors of the sanctuary and side chapels are laid with mosaic tiles, and the whole of the church is floored with black, white, and red tiles, in patterns. The carving of the chancel has been completed; but the remaining portion of the church is left in block. The windows throughout are of cathedral glass, the small squares therein alternating in colour with tinted green and creamy white.

DISSENTING CHURCH-BUILDING NEWS.

Peckham.—Four memorial stones have been laid in connexion with a new Wesleyan chapel which is being built in Lordship-lane.

Hanley.—The new Wesleyan chapel here has been opened for divine service. The building, which is Gothic in character, was designed by Messrs. Scrivener & Son, architects, Hanley. There is accommodation for 300 persons. The length is 60 ft., and the breadth is 33 ft., with schoolroom underneath of the same proportions. The building is of blue and red bricks, with stone dressings, and the roof is covered with blue and red tiles ornamentally arranged. The chapel is seated throughout with open benching, stained and varnished. The roof is open timbered, and there is a gallery at one end of the chapel. The rostrum is of pitch pine, with a polished oak rail, and the panels, like those in front of the gallery, are filled in with scarlet cloth. The side windows, fourteen in number, are of tinted glass. There are also two vestries, and a porch entrance from Keeling's-lane. Mr. R. Hammersley, of Bucknall-road, is the builder, and the contract was for 1,355*l.*

Fenton.—The new Wesleyan chapel, the foundation-stone of which was laid in April last year, has been opened for divine service. The new edifice stands on the site of a plain old one which accommodated the Wesleyans for about sixty years. The style of the building is Italian. It is of red brick, with bricks of other colours sparingly introduced for relief, and Hollington stone dressings. The accommodation is for about 700 persons, and a portion of the sittings are free. The ground-floor is approached through inner and outer vestibules, fitted with swing doors to avoid draughts; and the galleries, which extend all round the building, are entered by two staircases from the inner vestibules in front, and a staircase at the back, intended more especially for the choir and school children. At the rear of the chapel there are a spacious class-room and a minister's vestry. The central portion of the front gable contains the two entrance doorways, and a five-light window with traceried head. The interior is arranged so as to secure ample light and ventilation, and the acoustic properties of the building are said to be good. The ground-floor and galleries are fitted up with open pews with inclined backs. The interior woodwork is of pitch pine and red deal, stained and varnished. The building is warmed by hot air. It has been erected by Mr. Newbon, of Longton, from the design of Mr. G. B. Ford, architect, Burslem. The stonework has been executed by Mr. Sherratt, of Longton; and the gasfitting, plumbing, glazing, and painting, by Mr. Peake, of Fenton. The cost of the building has been 2,185*l.* 14s., including lighting and heating apparatus.

A Public Hall for Tonbridge.—It has been resolved, at a public meeting, to establish a limited company, with a capital of 5,000*l.*, in 5*l.* shares, for the purchase of a site and erection of a public-hall for 500 persons. The site has a frontage of 46 ft., and the hall will be 35 ft. wide and 70 ft. to 90 ft. long. A committee has been appointed, and nearly 600 shares have already been guaranteed.

SCHOOL-BUILDING NEWS.

Worthing.—The foundation-stone of the Broadwater schools has been laid by the Bishop of Chichester. The contractor is Mr. W. Softly. The contract amount is 855*l.* The three new schools for Broadwater and Worthing will cost nearly 3,000*l.*, towards which the sum of 2,500*l.* has already been obtained.

Wheathampstead.—In order to meet the requirements of the Education Department to provide additional accommodation for eighty children, a new school is in course of erection at Gustard Wood, and the first stone has been laid. The building will contain accommodation for 100 children, and will be similar in construction and design to the existing national schools. The plans have been prepared by Mr. Edward Browning, of Stamford, architect, who made the plans for the national schools, and for restoring the church.

Ross.—The foundation-stone of the new Board schools, in Cantelupe-road, has been laid by Mr. Thomas Blake, chairman of the School Board. Numerous articles were deposited beneath the stone, among which was a copy of the *Hereford Journal*, *Hereford Times*, *School Board Chronicle*, and other papers; also a duplicate of the Board's seal, a list of the workmen employed, and two coins, one of very ancient date.

Defford-cum-Besford.—A new school has been opened here. It is situated between the two villages of Defford and Besford, and is capable of affording accommodation for 100 scholars. In connexion with it is a teacher's residence. Mr. Hopkins, of Worcester, was the architect; and Mr. Smith, of Eckington, the builder. The work, however, has not been thoroughly completed for want of funds. A fence is needed against the road, and on the west side of the school; and to complete the work it is estimated that a further sum of 60*l.* is required.

Books Received.

The Art of Grafting and Budding. By CHARLES BALTET. London: Robinson, Southampton-street.

THE volume under notice is a translation of M. Charles Baltet's French work "L'Art de Greffer," and is said to embody all that is known on the subject. The various methods of grafting and budding are described at length, with numerous illustrations, an enumeration of the trees, shrubs, &c., to which each mode of operation is best applied; and other information. The art of grafting and budding has for many years been so extensively and successfully practised in France that French gardeners are now far in advance of all others in this branch of horticulture.

The Workman's Magazine. Edited by HENRY SOLLY. No. 6. June, 1873. Kent & Co., Paternoster-row, London.

THIS new sixpenny monthly magazine appears to be going on well. The present issue contains a paper on "Wages," by H. Shaen Solly, and others on "The State Management of Railways," "Common Sense about Health," "England in 2085," "Things New and Old," and others, besides intelligence as to workmen's questions, reviews, correspondence, &c.

VARIORUM.

IN the *Contemporary Review* (King & Co.), which, by the way, is edited by an architect, Mr. Herbert Spencer comments valuably on the want of common sense in much every-day work:—"You rise in the morning, and, while dressing, take up a phial containing a tonic, of which a little has been prescribed for you; but after the first few drops have been counted, succeeding drops run down the side of the phial—all because the lip is shaped without regard to the requirement. Yet millions of such phials are annually made by glass-makers, and sent out by thousands of druggists: so small being the amount of sense brought to bear on business. Now, turning to the looking-glass, you find that, if not of the best make, it fails to preserve the attitude in which you put it; or, if what is called a "box" looking-glass, you see that the maintenance of its position is insured by an expensive appliance that would have been superfluous had a little reason been used. Were the adjustment such that the centre of gravity of the glass came in the line joining the points of support (which would be quite as easy an adjustment), the glass would remain steady in whatever attitude you gave it. Yet year after year tens of thousands of looking-glasses are made without regard to so simple a need. Presently you go down to breakfast, and taking some Harvey or other sauce with your fish, find the bottle has a defect like that which you found in the phial: it is sticky from the drops which trickle down and occasionally stain the table-cloth. Here are other groups of traders similarly so economical of thought, that they do nothing to rectify this obvious inconvenience. Having breakfasted, you take up the paper, and, before sitting down, wish to put some coal on the fire. But the lump you seize with the tongs slips out of them, and if large, you make several attempts before you succeed in lifting it—all because the ends of the tongs are smooth. Makers and vendors of fire-irons go on, generation after generation, without meeting this evil by simply giving to these smooth ends some projecting points, or even roughening them by a few burrs with a chisel."——A writer in the *People's Magazine* describes a Japanese bridge:—"When we came in sight of the Fuji-kawa (river), we found we had to cross it by a suspension-bridge built entirely of bamboo. The Japanese are naturally very proud of this work; and they may well be so. It is the only one of the kind in the country, the river being too broad and swift to allow of bridges being built, except at enormous cost. At this place their ingenuity is displayed to perfection, and it is a sight well worth seeing. The surrounding scenery is very pretty, the river running down a lovely valley, the hills covered with trees on each side, of great height, rising abruptly from the banks. One feature connected with the scenery of Japan is worth mentioning, viz., that the foliage does not strike Europeans as strange or tropical; they would generally recognise all the trees, the most notable peculiarity being the bamboo growing amongst our well-known trees, with occasionally a palm or banana here and there; the chestnut, hazel, lime, and beech are plentiful, but the wax-tree is very tropical in appearance. The bridge we had to cross was about 100 ft. above the river, and its width a single span of 60 ft. It is made by the bamboo being twisted into a sort of rope, and a single plank is laid on it to walk over upon. The bridge shakes and sways very much as any one crosses, and, there being no railing of any sort at the side, it looks more unpleasant to cross than it really is. The best method of getting over is to look straight to your front and walk quickly; to double across is perhaps better, though, of course, nothing can prevent its swaying from side to side in rather a disagreeable manner. The bridge is about 4 ft. wide,—not a bit too much for any one who may possibly lose his head, as the river rushes below over huge rocks in a very uninviting way."——*Chambers's Journal* says: "We have more than once made known that stone in quarries and coal in mines could be 'got' out by machinery with great economy of time and labour. Even advantageous improvements, it seems, cannot be adopted all at once; but a beginning has been made, and for some months past a machine worked by compressed air has cut out the coal in a colliery near Glasgow. This machine is to be introduced into the mines of Northumberland and Durham; and should it pass into general use, the mines would become less unwholesome than at present, through the escape of the compressed air, and the greater part of the coal-miners would have to find some other employment. There are 360,000 men and boys employed in British coal-mines; not more than 60,000 will be wanted when every mine has its machine. Another advantage is the avoidance of the waste which takes place where coal is dug by hand; this waste at present amounts to about 15,000,000 tons a year. With the machine, the waste would not be more than 4 per cent. of the whole quantity of coal produced."

Compensation to Workmen. — Mr. H. Palmer, in the House of Commons, asked the President of the Board of Trade when he intended to introduce his promised Bill respecting compensation to workmen for injuries in their employment. Mr. C. Fortescue admitted that the subject demanded early attention, but could not promise a Bill this session. The question of the liability of shipowners for injuries done to their seamen was embraced in the reference to the Royal Commission on unseaworthy ships, and it would be better to await the report of that Commission.

Miscellanea.

A Substitute for Church Bells.—At a time when efforts are being made in different parts of the country to raise peals of church bells, a suggestion on the subject in the *Choir* is opportune. Dr. Ferdinand Rahles, of Malvern House, South Hackney, writes suggesting the use of steel bars as a substitute for cast bells. They are, he says, introduced in the United States and Germany with great success, and would form a new branch of industry should the manufacture of them be taken up in this country. There is not only a large area for them in England, but a great demand may be expected from the flourishing colonies of Canada, Australia, New Zealand, and India, as soon as they are known in those regions. The following outlines will explain their particular merits, combined with cheapness of production:—Steel bars produce a very pure, distinct, and particularly melodious sound, with many other great advantages over church bells of moderate size. The power of a clear and sonorous sound can be obtained equally well, if not superior, to that cast from bell-metal or steel. Their weight will be light in comparison to the present ponderous productions. They will not burden the steeple so much, and, consequently, will give more scope for architectural design, and have the merit of far-sounding. Their winding and hanging up will not be so difficult, dangerous, and expensive. They are not liable to crack, as is often the occurrence with bells, and are therefore adapted for use in any climate. By a simple and mechanical contrivance they are more easily set in motion. The cost, compared with manufactured cast bells, is so trivial that small churches and chapels, and especially mission stations abroad, will be enabled to secure a peal. Three or four steel bars, forming a peal whose weight would not exceed 100 lb., could be manufactured for 11*l.* or 12*l.*, whereas only three cast bells of the same power would at least amount to 50*l.* or 60*l.* They can be made of any dimension, weight, and power of sound. Every note or harmony can be produced more easily, and the tuning is obtained more precisely than in cast bells. In addition to their being a cheap and effective substitute for church bells, they are also equally applicable to places where large bells are required, such as dockyards, on board of vessels, steam-boat piers, railways, and manufactories.

A Box-making Machine.—Mr. Wormersley, of the Carrow Works, of Messrs. Colman's gigantic mustard and starch business, has invented and patented a piece of mechanism for improving and facilitating the manufacture of small wooden boxes, varying from 9 in. to 24 in. in length, with a proportionate depth. Of such boxes an enormous number are required in the Carrow business. By the new machine there is not only a great saving in time and labour, but the box is much more finished and easily rendered air-tight. The machine cuts transversely into a wooden board, of a width and length that vary for different-sized boxes, three rather deep V grooves, and at the same time bevels the rough ends of the board. This done, the board can be folded or bent together until the groove is close, with or without glue added, when there are produced the four sides of a box, only a bottom and a lid being wanted to complete it. Nails are knocked in crosswise at each of the mitred corners, a bottom and a lid are quickly nailed on, and then there is completed a box without any gaping cracks at the corners. The machine was made at Carrow, by Mr. Keymer, under Mr. Wormersley's direction, and will be exhibited in the London International Exhibition.

Wells Cathedral.—The restoration of the west front of this cathedral is progressing. The south-west side, up to the small north-west door, may be said to be finished, and has much the appearance of a new building, though not a bit of new stone, it is asserted, has been used beyond that which was absolutely necessary. The constant attention of Mr. J. T. Irvine (who also superintends the work of restoration going on at Bath Abbey Church) is given to insure careful and substantial reparation. The new contract with Mr. White for completing the restoration at Wells includes the remaining portion of the west front, and the whole of the sculptured work (except the figures), with the small lias columns on the north and eastern sides of the base of the north-west tower, and the tower itself.

The Widening of Bristol Bridge.—The present extreme width of the structure is 55 ft., and it is proposed to widen it 11 ft. The extra width will be on the Welsh-back side. For the purpose of these improvements, the city has purchased the row of shops at the Welsh-back corner of the bridge, and the toll-house at the other end near the Redcliffe-street corner, and the contractors have been engaged since April in removing these premises, and making preparations for the alterations which are to follow. The work is under the direction of Mr. F. Ashmead, the city engineer, and the contractors for the masonry are Messrs. Brock & Bruce, of Temple-meads. The masonry work, according to our authority, the local *Times*, is well advanced, but the iron work is not yet commenced. To effect the alterations, coffer-dams have been sunk at the four piers, and it is expected that the work will be finished in about six months from the present time. The new side of the bridge will correspond with that opposite. The columns are to be of granite, and there are to be wrought-iron girders, and cast-iron cantilevers for carrying the footway. A wrought-iron girder will be thrown across the corner where the fishmarket is now held, and an increased width of approach will be secured at this spot.

The new Reredos for Exeter Cathedral.—The new reredos for the choir of this cathedral is now in course of completion from the design by Sir Gilbert Scott, at an estimated cost of 1,625*l.*, by Messrs. Farmer & Brindley, sculptors, London. The expense will be defrayed by Dr. Blackall and the Rev. Chancellor Harington conjointly. The summit of the reredos rises to a height of 22 ft. above the floor of the choir, the materials used in its construction consisting of marble and Derbyshire alabaster, with precious stones. The centre compartment of the reredos is occupied by a sculptured group in alabaster representing the Ascension, the figure of the Saviour being 3½ ft. in height. The figure of St. Peter, to whom the cathedral is dedicated, has likewise a prominent position, while on either side of the Saviour appear angels. The Transfiguration and Descent of the Holy Spirit on the day of Pentecost are also represented. The reredos occupies about a third of the space at the east end of the choir. The central compartment alone will cost 900*l.*, and it has been found that the estimate of 1,625*l.* for the whole work will be considerably exceeded.

Healthy Tynemouth.—The public health of this borough is said to be so good that, for the first time since its cemetery was opened the fees taken during the past month were not equal to meet the ordinary working expenses. The *Newcastle Daily Chronicle* says:—"There is no doubt but North Shields is one of the healthiest seaports in the kingdom. It is admirably sewered. Its streets are kept clean and wholesome, the principal thoroughfares being sluiced in dry weather, and the sewers washed out with salt water. The middens are cleared out regularly by a staff of men employed under the superintendent of police and the inspector of nuisances. The result of this is that the public health is brought up to the highest standard amongst seaports in the kingdom, and the town is kept clear of epidemics. True, a little more has to be paid in rates, but the young ones of the household are protected from danger, and the working men of the town get better results out of their own lives by being enabled to carry on their employment more regularly."

Fire Detectors.—An experimental display of some of Professor Grechi's instruments for signalling the commencement of fires in any room, or in interspaces difficult of access, has been made in one of the corridors adjoining the Machinery Court at the International Exhibition at South Kensington. Small straw fires, inflamed with petroleum, were ignited, when the instruments caused the alarm-bells to ring, and notified the particular locality by the fall of a numbered disc. A lantern was also lighted in one compartment by the falling of a small weight upon glass globules of sulphuric acid. The principle of the apparatus is this: a double spiral of zinc and platinum is soldered to a disc carrying an index and a small wire contact-maker. When the spiral expands by the heat the contact-maker is turned by the motion of the spiral, thus putting in action a current from an electrical battery, by which the alarum-bells and signal apparatus are put in action. The instruments are very roughly made, and cost about 2s. a-piece.

Utilisation of Coal-dust.—A new building material is found in coal-dust. The mixture is composed of one-sixth cement and five-sixths coal-dust. In the Waverley hydropathic establishment at Melrose the experiment was tried. A series of thick sheet-iron plates are stiffened at the edges with angle iron, the plates being attached to uprights of T iron, and being kept in the proper position by pins, the plates are fixed so as to be readily raised as the building progresses. After the requisite proportions of mine-dust and cement have been mixed together, and the whole thoroughly saturated with water, the mixture is flung in between the plates, and large pieces of slag or stone bedded in it; thereafter another bed of concrete, which fills the interstices between the larger pieces, and thoroughly fixes them; another layer of stones or slag is then added, and so on, till the space between the plates all round the building is filled. After being allowed to stand for a night, the concrete will be hard enough to allow of the plates being lifted in the morning.

Ancient Wall-painting at Henstridge.—A curious old painting has been discovered on the north wall of the parish church of Henstridge, under innumerable coats of whitewash, and has been laid bare as well as was possible. The picture occupies a space of 8 ft. by 9 ft. 6 in., and exhibits a gigantic figure of St. Christopher, bearing on his shoulder a small figure of the Saviour, whose hand is raised in the act of blessing. The feet of St. Christopher are in water, and around them are fishes. In the background are a windmill, packhorse laden with corn, and a dog, with a man carrying on his head a sack. There is also a lofty rock, surmounted by a church, and on a projecting ledge stands a monk with girdle and rosary, holding out over the water a lantern hung to the head of a stick. The whole picture is surrounded by a border of lotus leaves. It is said to be too much injured to be preserved, but it will be accurately copied.

A Mental Almanac.—With the title of "An Infallible and Instantaneous Mental Almanac for any Year in any Century of the Christian Era. By W. Relton, Insurance Secretary," a pamphlet has been published by Pitman, of Paternoster-row. This is an ingenious and curious "method of finding by an easy mental process, and without referring to tables, the day of the week corresponding to any day of the month, or the day of the month corresponding to any day of the week, throughout any year" of 5,000;—in short, a calendar carried in the head, by learning and remembering only less than thirty common words, significant of a few fixed numbers. We give an example:—Queen Victoria ascended the throne on the 20th June, 1837: what was the day of the week?

Year	4
June	0
Day of Month ...	20

Cast the sevens out of 24=3, or Tuesday.

Monte Video Harbour and Land Reclamation.—Mr. Charles Burn, C.E., has published a project for the construction of a sea-wall round the south and east sides of Montevideo, commencing at the Gasworks and ending at the Aduana. The enclosed space between the sea-wall and the shore will be filled up, and by this means about 450,000 square varas of building land will be reclaimed from the sea, estimated to be worth 5,250,000 dols. Along that portion of the sea-wall on the south side, facing the sea, will be a road and promenade, planted with trees, at present much wanted in Montevideo, and along the promenade will be built first-class residences. At the end of the sea-wall, opposite the Calle 25 de Mayo, will be run out a solid stone pier, with five landing jetties. Mr. Burn is known as the author of a treatise on the Construction of Breakwaters, and was the projector and engineer of the Amsterdam Harbour and Ships Canal.

American Engineering. — An elaborate Trade Circular has been sent us, consisting of something like a treatise on Bridge Engineering, profusely illustrated, and titled "Phœnixville Bridge Works: Clarke, Reeves, & Co. Office, No. 40, Walnut-street, Philadelphia. Second illustrated Album of Designs. Philadelphia: J. B. Lippencott & Co. 1873." It is something more than a mere trade circular, this, and contains matter of use to English engineers and others with reference to American modes of working.

Opening of Wrexham Public Hall and Corn Exchange.—The new Public Hall and Corn Exchange, Wrexham, which has been converted out of the old Yorkshire-hall at a cost of about 5,000*l.*, has been opened. The new hall will seat over 1,500 people. The larger hall is 80 ft. long by nearly 50 ft. wide, and lighted from the top. A balcony runs all round, capable of holding 400. A stage is erected at one end, and behind are green-rooms, lavatories, cloakrooms, and other conveniences. Running round the hall on the ground-floor are suites of offices and store-rooms; on the first floor are also offices and refreshment-rooms; while on the third floor is a suite of rooms, including billiard-rooms, reading-room, &c., which will be taken by a gentlemen's club about to be formed in Wrexham. There is on this story a small concert-room. The architects were Messrs. Holden & Co., Manchester; and the contractor is Mr. W. E. Samuel, Wrexham.

Sugar a Test for Potable Water.—From an article on "The Discrimination of Good Water and Wholesome Food," in the *Pharmaceutical Journal and Transactions*, we find the following simple directions given for testing water, whether it is good and drinkable:—"Good water should be free from colour, unpleasant odour, and taste, and should quickly afford a good lather with a small proportion of soap. If half a pint of the water be placed in a perfectly clean, colourless, glass-stoppered bottle, a few grains of the best white lump sugar added, and the bottle freely exposed to the daylight in the window of a warm room, the liquid should not become turbid, even after exposure for a week or ten days. If the water become turbid it is open to grave suspicion of sewage contamination; but if it remain clear, it is almost certainly safe. We owe to Heisch this simple, valuable, but hitherto strangely neglected test."

The Gas Supply of the Metropolis.—At a recent meeting of the London Gas Consumers' Association, the report of the half-yearly meeting of the South Metropolitan Gas Company, which has for the last twelve months supplied 16-candle gas, free of meter rent, at 3s., being a net-charge of 2s. 10d. per 1,000 ft., was read. It stated that,—

"notwithstanding the reduction in the price of gas last year to 3s. per 2,000 ft. and the increased cost of coals and all other materials and labour, the profits of the half-year amount to 15,836*l.*, against 15,064*l.* of the corresponding period of 1871; the increase of the cost of coal having been met by extra receipts for coke during the half-year under review."

It was contended that all the London companies could afford to supply gas at the South Metropolitan rate, a saving in the cost of gas to consumers amounting to 715,520*l.* a year.

Cookery.—An experiment for the purpose of practically testing a system for the preparation and expeditious distribution of meals ready for cooking, is about being made at the Australian Meat Agency Company's Department of the International Exhibition, South Kensington; when several hundred meals will be prepared and despatched uncooked to various parts of the metropolis previously agreed upon. The object is to enable good and nutritive meals to be placed at the disposal of working men at their respective homes, or places of employment, whether indoor or out-door. A committee is being formed, for the purpose of observing and reporting on the proposed experiment.

Cost of Filtering Sewage.—The cost of filtering town sewage is shown in a return presented to the House of Commons as follows:—Melton Mowbray, parish and Local Board, population 5,000, filter beds of gravel, surplus water being passed through charcoal before put into the river. Cost of works, 515*l.* 3s. 1d., viz., 215*l.* 3s. for the purchase of land, and 300*l.* for making tanks and building offices at the same. Other expenditure, — besides 179*l.* interest, annually, on cost of new sewer, for thirty years,—11*l.* 15s. for clearing out the tanks. Receipts during the year, *nil*; number of years in operation, nine. No nuisance has arisen from effluent water.

The Architect of the Royal Exchange.—We have received some letters from Mr. H. M. Grellier, reiterating his statement that Sir William Tite "merely adapted his father's designs to the requirements of the Gresham committee," and calling upon us to publish the letters. We have already expressed our opinion on the subject, and do not consider it necessary to return to it.

The Camden Society.—The report of the council of this society, read at the general meeting on the 4th of June, 1873, has been issued in a printed form. It announces the books proposed for issue during the present year, which are three,—a military memoir of Col. Birch, the Parliamentarian Governor of Hereford; Letters from London to Sir Joseph Williamson, Plenipotentiary at the Congress in Cologne in 1673; and a Chronicle of English History, Henry VII. to Elizabeth. The books issued last year were a memoir of Bedell, Bishop of Kilmore; Mayor of Bristol's Calendar, temp. Edward IV., and continuation; and Debates in the House of Commons in 1625. The Society is prospering.

Worcestershire Architectural Society.—It is in contemplation to have an excursion of the members of this society either the last week in this month, or on the 3rd of July, when it is proposed to visit the churches, and other objects of interest, at Preston, Much Marcle, Kempley, Dymock, and Donnington, starting from and returning to Ledbury. Much Marcle is a fine church, with good sepulchral effigies; and at Kempley church the walls are covered with the most valuable examples of twelfth-century wall painting, hitherto discovered in England. They have recently been brought to light by the vicar, who removed the whitewash with his own hands.

Proposed Visit of the Shah to the International Exhibition.—A committee, consisting of the Prince of Wales, the Duke of Edinburgh, the Duke of Sutherland, Earl of Carnarvon, Viscount Sydney, and Sir Thomas Biddulph, met on Saturday at Marlborough House to consider as to the *fête* to be given to the Shah of Persia. It was decided that the entertainment should consist of an inspection of parts of the International Exhibition, and of a grand concert at the Royal Albert Hall, and that the admission to the Exhibition should be by season tickets only.

A Writing Machine.—Among the novelties to be seen just now in London is a "writing machine," of American invention, which, it is confidently predicted, will come very shortly into general use. It is made in the shape of a small pianoforte, with three rows of keys, and the person using it "plays" it with both hands. A series of hammers strike against a band of riband, so prepared that an impression of the letter used is produced on the roll of paper which passes over the riband. The price of the machine is at present 25*l.*

A New and Powerful Magnet.—A magnet of extraordinary carrying power has been constructed by the well-known French physicist, M. Jamin. Whilst artificial magnets have not hitherto been made to carry more than four or five times their own weight, this magnet is able to sustain upwards of twenty-two times its weight. It is constructed of a great number of thin well-magnetised plates, instead of the thick plates generally employed.

The Discovery of Remains at the Railway Excavations, York.—A collection of skulls has been obtained from the excavations made by the North-Eastern Railway Company. There are about a dozen skulls obtained from that source already in the Museum of the Yorkshire Philosophical Society; and it is proposed to add the recent find to this collection. The skulls are evidently very ancient.

An Open Space in the City.—In the centre of Old Smithfield an open space or park has been laid out and opened at the expense of the Corporation of the City of London, who have, in addition, erected there a costly drinking-fountain. The open space is called Smithfield Park. Though not large, it is well laid out with plants and flowers. A view of the drinking fountain we have already published.

Metropolitan Water Supply.—In reply to Mr. Agar-Ellis, in the Commons, Mr. Stansfeld said it rested in the first instance with the Metropolitan Board of Works to enforce a constant supply of water to the metropolis, and if they failed, the Local Government Board would then take the matter in hand. No steps had yet been taken in the matter.

Literary Fund Dinner.—The total receipts at the recent dinner presided over by the Right Hon. W. E. Gladstone were 1,408*l.*, and leave a clear addition to the fund of more than 1,000*l.*

The Royal Horticultural Society.—The annual exhibition of this society has been held in their gardens at South Kensington. The assemblage was a large one, as also were the number of flower exhibitors and the variety of specimens. The flowers and fruits were arranged in a large tent at the bottom of the grounds. A number of prizes were awarded.

Cameo Cutting.—We are glad to hear that her Majesty the Queen has commissioned Mr. James Ronca to execute four cameos for the Victoria and Albert Order: two will be on onyx, and the others shell. Our readers may remember that Mr. Ronca recently executed a fine cameo on onyx for the Art Union of London.

New Cattle Market at Windsor.—A new cattle-market has been opened at Windsor, under the auspices of Mr. W. Mason. The site is on the west of the town, near the terminus of the Great Western Railway. A good cattle-market in the royal borough has long been wanted.

Health.—A course of six lessons on health to working women is about to be given by Miss Hoardon, on behalf of the National Health Society, at the Portland British schools, Little Titchfield-street, Great Portland-street. Working women applying at the schools can have tickets gratis; and they *should* apply.

Chapel of the Assumption, Kensington. This building, illustrated in our last issue, is warmed by an apparatus set up by Messrs. Bacon & Co.

Arundel Society.—The annual meeting is fixed to take place on Tuesday next, the 17th inst.

TENDERS

For St. Laurence's School, Hulme, Manchester, exclusive of the plastering and painting. Mr. Herbert E. Tijou, architect:—

Adams & Marshall	£1,958 0 0
Ward	1,800 0 0
Southern	1,700 0 0
Thompson	1,672 0 0
Herd (accepted)	1,636 0 0

For alterations and additions at the Archway Tavern, Highgate. Mr. H. J. Newbon, architect. Quantities by Mr. H. W. Lamb:—

Hockley	£1,309 0 0
Taylor	1,122 0 0
Shurmur	843 0 0
Brindle (accepted)	794 0 0

For new warehouse, Queen's-road, Nottingham, for Messrs. Charles Cox & Sons. Messrs. Hovenden, Heath, & Berridge, architects:—

Lynam	£9,805 0 0
Fish & Sons	9,728 0 0
Dennett & Co. (accepted)	9,635 0 0

For painting exterior of Alexandra Orphanage for Infants, Hornsey-rise:—

Cox	£144 0 0
Thomas	138 0 0
Burford	137 13 6
Southcott	129 10 0
Boden (accepted)	86 0 0

For warehouse in Southampton-street, Leicester. Mr. E. Burgess, architect. Quantities by Mr. L. C Riddett:—

Loveday	£3,074 0 0
Bland	2,737 0 0
Osborne, Bros.	2,606 0 0
Tomlinson	2,625 0 0
Tyers	2,500 0 0
Major (accepted)	2,474 0 0

For infant school, Percy-street, South Hackney, for the Rev. R. D. Tyssen, rector of South Hackney. Mr. E. Low, architect:—

Forrest (accepted)	£425 0 0

For Memorial School, Littleton, Middlesex. Mr. E. Low, architect:—

Knight & Son (accepted)	£600 0 0

For two houses and shops (shop-fronts not included), High-street, Staines, for Mr. T. P. Harris. Mr. E. Low, architect. Quantities supplied by Mr. F. Johnstone:—

Turner	£2,338 0 0
Smith	2,100 0 0
Collvier	2,175 0 0
Sawyer	2,089 0 0
Messom (accepted)	2,048 0 0

For new bank and shop premises, Edgware-road and Praed-street. Messrs. Bird & Walters, architects:—

Hill & Sons	£8,828 0 0
Higgs	8,566 0 0
Lethey, Bros.	7,900 0 0
Newman & Mann	7,875 0 0
Adamson & Co.	7,789 0 0
Henshaw & Co.	7,433 0 0
Brown	7,393 0 0
Williams & Son	7,162 0 0
McLachlan	7,090 0 0
Mark	6,848 0 0
Temple & Foster	6,647 0 0
Ebbs & Sons	6,512 0 0
Thompson & Smith (accepted)	6,367 0 0